

FineScale MODELER

WINTER 1982 / \$2.25

T.M.



RESEARCH DATA:

Color schemes for a Battle of Britain Supermarine Spitfire Mk. IA . . . from manufacturer to museum



How to make clear acrylic display cases
Modeling the Soviet T-60 scout tank
in 1/35 scale
Formula 1 race car cockpit detailing



BUILDING YOUR FIRST DIORAMA

This is America's fastest growing hobby!

Assemble, finish and collect

1:43 scale ALL-METAL cars

the universal standardized scale
for miniature car collections.

All the detail of the original has been captured in miniature to reproduce an exquisite replica. All are cast in soft but durable white-metal except for vinyl tires and clear plastic 'glass' pieces. Many contain brilliantly plated adornments and full color decals. Unlike partial or all plastic models, these miniatures when finished will retain their beauty for many years of proud ownership.



You will enjoy the few hours of leisure pleasure in the simple assembly and finishing of each model. With this, there will be a long lifetime of owning pleasure with each jewel-like miniature. We now have well over 300 different outstanding automotive creations. Many of these may be completed in more than one version. Now, they are valuable collectables

*... in miniature
... in 1:43 scale
... in ALL-METAL*

McLaren MP4 No.R30K
#7 John Watson - Belgium GP
and Detroit GP winner or

manufactured by

Western Models

Begin your collection today!

Each jewel-like miniature is only **\$29.95**
Select any four listed and save over **\$20.00**
just \$99.69 (plus shipping and handling)

#8 Niki Lauda - Long Beach GP
and British GP winner
(assemble with or without front wing)

Other Formula 1's available			
1976 Elf Tyrrell 34/2 6 wheel	No.R4K	1979 Parmalat-Brabham BT48	No.R20K
1978 Tyrrell 008	No.R11K	1979 Saudia-Williams FW07	No.R21K
1978 Wolf WR5	No.R12K	1979 Marlboro McLaren M29	No.R22K
1978 Saudi-Williams FW06	No.R13K	1979 Wolf WR8	No.R23K
1978 J.P.S. Lotus 79	No.R16K	1979 Ferrari 312 T4	No.R25K
1979 Martini Lotus 79	No.R16KK	1980 Saudia-Williams FW07B	No.R26K
1979 Tyrrell 009	No.R18K	1981 Lotus 81 Essex	No.R27K
1979 Tyrrell 009 CANDY	No.R18XX	1982 Brabham BT50C	No.R32K
1979 Warsteiner Arrows A1	No.R19K	1982 Williams FW07C	No.R34K
		1982 Osella FA1C	No.R35K

We also feature these foremost manufacturers

Precision Miniatures

danhausen metal 43

F.D.S. automodelli

Scale Racing Cars

First time available to hobbyists from professional pattern makers and model builders. Now in pints. The most versatile of all Set-Fast Filler Pastes, this is a two-part system which is smooth and creamy. Sets absolutely rigid in 15 minutes with no shrinkage or pinholing. Adheres to and bonds most metals, plastics, and itself. May be applied in any thickness, from seam filling to creating all new contours. File; carve; sand to a perfect feather edge. A must for all model builders. Ultra Filler No. 14 \$7.95



Charge to Visa/Mastercard
Minimum \$17. Sorry no COD
Add Shipping and Handling
Domestic \$4.00/Foreign \$5.00
Calif Res add 6% sales tax

Order today and send to
M C M Dept E3
1525 W MacArthur Blvd #20
Costa Mesa CA 92626
or Phone 714-751-8232



Discriminating Hobby Shop Owners

We have available the foremost manufacturers of white metal kits produced thru-out the world. For a complete catalog and order information, request on your stores letterhead and enclose a company check for \$3.00.

Mail to:
G P Enterprises
1525 W MacArthur Blvd #20
Costa Mesa CA 92626
Phone 714-751-8233

Catalog with full color of over 300 available car kits.
Features Western Models Fully Finished miniatures.
Includes complete finishing and miniature tool section

\$2.00 or FREE with order

FineScale MODELER

VOL. 1 NO. 2 WINTER 1982

EDITORIAL STAFF
Editor: BOB HAYDEN
Associate Editor: BURR ANGLE
Editorial Assistant: MARCIA STERN
Editorial Secretary: MONICA BOROWICKI
Librarian: GEORGE H. DRURY

ART STAFF
Art Director: LAWRENCE O. LUSER
Staff Artist: BILL SCHOLZ
Staff Photographer: A. L. SCHMIDT

EXECUTIVE STAFF
President and Publisher: JAMES J. KING
Editorial Vice President: DAVID P. MORGAN
Vice President, Sales/Marketing: W. A. AKIN JR.
Executive Art Director: GEORGE A. GLOFF
Ad Sales Manager: FREDERICK J. HAMILTON
Circulation Sales Manager: THOMAS J. D'AMICO
Sales Promotion Manager: GARY W. DOLZALL
Advertising Production Manager: ART CURREN

ON THE COVER

Ken Sommerfield's detailed painting of Supermarine Spitfire Mk. IA P9306 is but one of 11 full-color 1/48 scale views of this Battle of Britain warbird in this issue. Ken's article begins on page 52. The superetailed 1/12 scale Formula 1 car is by Paul Budzik (page 38), and Dennis Moore built the Heller 1/400 scale *Dunkerque* — and the clear plexiglass display case (page 34). Photos by Paul Budzik and FSM Staff Photographer A. L. Schmidt.



FINESCALE MODELER (ISSN 0277-979X) is published quarterly by Kalmback Publishing Co., 1027 N. Seventh Street, Milwaukee, WI 53233. (414) 272-2060. SUBSCRIPTION RATES: 8 issues, \$15; with foreign postage (outside the United States) 8 issues, \$19. © 1982, Kalmback Publishing Co. Second-class postage paid at Milwaukee, WI, and at additional offices. Printed in U.S.A. All rights reserved. This publication may not be reproduced in part or in whole without written permission from the publisher, except in the case of brief quotations used in reviews. POSTMASTER: Send address changes to FINESCALE MODELER, Kalmback Publishing Co., 1027 N. Seventh St., Milwaukee, WI 53233.

FINESCALE MODELER assumes that such material as letters, club news, new-product information, etc., is contributed gratis. Feature articles and scale drawings are paid for on acceptance. Photographs accepted separately are paid for upon publication. Leaflets outlining in detail the preparation of features, photographs, and drawings are available on request from the editorial secretary. Unsolicited material, if not accepted, will be returned only if postage and wrappings are provided for this purpose. FINESCALE MODELER assumes no responsibility for the safe return of unsolicited material.

Modeling the Soviet T-60 scout tank in 1/35 scale — 22 STEVE ZALOGA

An ideal vehicle for your first scratchbuilding project

Modeling a mountain man in the 20th century — 29 BILL TILTON

Step-by-step techniques for painting and adding realistic buckskin texture to a 90 mm figure

How to make clear acrylic display cases — 34 DENNIS MOORE

Protecting and preserving your models with plexiglass

Formula 1 race car cockpit detailing — 38 PAUL BUDZIK

The techniques are every bit as applicable to aircraft

Building your first diorama — 45 BRUCE CULVER

Basic techniques you can use to construct an attractive scene in just two or three evenings

Research data: Supermarine Spitfire Mk. IA P9306 — 52 KEN SOMMERFIELD

Color schemes and markings for a Battle of Britain warbird from manufacturer to museum

DEPARTMENTS

Update — 4

Reader Forum — 8

Workbench Reviews — 11

FSM Looks at New Products — 18

From the Editor — 21

Book Briefs — 62

Tips and Techniques — 68

Index to Advertisers — 74

the MOREL WORKS

We feature what we feel are the finest lines of scale models.

We do not have a catalog available, write for specific items desired.

- Model Railroad
- Military - Armor & Aircraft
- Autos & Ships - Kits & Parts
- Radio Control Equipment
- Reference Books, Periodicals, and Photos
- Paints, Decals, Tools, and Scratch Builder Materials

1655 E. COLORADO BLVD.

PASADENA, CALIFORNIA 91106 213-793-6061

FSM UPDATE

FSM invites manufacturers and publishers to submit news releases, photos, product samples, and new catalogs. Send all material to FSM Update, FINESCALE MODELER, 1027 North Seventh Street, Milwaukee, WI 53233.

Kit releases. Combat Models, 1633 Marconi Road, Wall, NJ 07719, has announced four new vacuum-formed kits: 1/48 scale B-58 Hustler, and 1/32 scale SBC-3 or 4 Hell-diver, Curtiss P-6E Hawk, and Brewster Buffalo. Die-cast metal parts will be included. Combat Models also plans to add die-cast landing gear to some of its older releases: F-101, F-105, A-7, F-8, and F-100.

Koster Aero Enterprises, 233 East Ellis Avenue, Libertyville, IL 60048, offers a new 1/48 scale conversion kit: Kit No. 3 contains 16 vacuum-formed parts and 8 injection-molded parts to convert a Monogram P-51B to a P-51A and A-36; decals are included. Koster also has announced kits 4 and 5. Number 4 will contain 9 vacuum-formed parts, including 5 clear parts, to convert either Revell's or Monogram's B-17 to a B-17C or B-17D. Kit No. 5, a 1/48 scale vacuum-formed multiple-version kit of the Junkers Ju 88A, G, S, and T, will have 80 vacuum-formed parts, including 11 clear parts and 42 injection-molded parts to build most versions of the Ju 88A-4 and 5, G, S, and T (bomber, recon, and nightfighter, both Jumo and BMW engines). Both kits 4 and 5 will include decals.

Model Rectifier Corporation, 2500 Woodbridge Avenue, P. O. Box 267, Edison, NJ 08817, has added the following Tamiya kits to its 1/24 scale sports car series: No. SS2421, Toyota Celica XX2800 GT, \$10.98; SS2422, Nissan Skyline 2000 Turbo GTE-S, \$11.98; SS2425, Nissan Skyline hardtop 2000 turbo, \$11.50; SS2426, Honda City R with Motocompo minibike, \$10.98; and SS2427, Renault 5 Turbo Rally, \$10.98. In its 1/12 scale motorcycle series are 1406,

"Unique Books for Unique People"™

World War 2 Photo Albums

- 96 pgs, 160 illus.
- German Mountain Troops
- German Fighters Over Russia
- German Bombers Over England
- Panzers in the Desert
- E-Boat & Coastal Craft
- German Maritime Aircraft
- Waffen SS in Russia
- Fighters Defending the Reich
- Panzers in Northwest Europe
- Fighters Over The Mediterranean
- German Destroyers and Escorts
- Panzers in the Balkans & Italy
- German Bombers Over Russia
- German Paratroops in the Med
- German Fighters Over England
- Panzers in Russia 1941-43
- Panzers in Russia 1943-45
- U-Boats in the Atlantic
- German Bombers Over the Med
- German Capital Ships
- Techniques of Ship Modeling 130 pgs
- How To Go Car Modeling 152 pgs, 200 illus.
- Building Model Trucks 140 pgs, 264 illus.
- How To Go Plastic Modelling 210 pgs, 85 illus.

\$5.95

AZTEX also offers hundreds of fine books on: Aviation, boating and sailing, collecting, commercial vehicles, industrial history, maritime and military subjects, model making, motorcycling, motor history and motor racing, railroads and wargaming. All our books are available through your local B Dalton, Walden, or independent bookseller or hobby store; or may be ordered directly from us.



AZTEX Corporation, Dept 21
P O Box 50046
Tucson, Arizona 85703-1046

Please ship _____ books to address below; total order is \$_____.

Name _____

Address _____

City _____

State _____ Zip _____

Visa and Mastercard accepted. Please list all numbers including inter-bank number, expiration date and signature. AZ Residents add 6%. Postage and handling \$1.50 per order. Phone orders call (602) 882-4656.

Dealer and wholesaler inquiries invited.

Please send free catalog. (Enclose \$1.00 for first class mail)

Hobby*Vent MODEL I

"Nothing else comes close"

for ideal spray painting ventilation conditions

Send SASE for literature to:
Mitchell Products, Inc., 421 N. Lake Street, Mundelein, IL 60060, 312-949-1156



Honda CB750F, \$11.98; 1407, Honda CB900F2 Bold'or, \$11.98; 1408, Honda CB1100R, \$11.98; 1409, Suzuki RGB500

Team Gallina, \$10.98; and 1410, Suzuki Katana GSX1100S, \$10.98. In the 1/6 scale motorcycle series, releases are BS0620, Honda CB750F, \$74.98, and BS0622, Honda CB1100R, \$74.98. Recent releases in the 1/35 scale prehistoric world series are 6901, Triceratops Eurycephalus, \$6.98; 6902, Stegosaurus Stenops, \$6.98; and 6903, Tyrannosaurus Rex, \$7.98. Other Tamiya releases include MM224, 1/35 scale M1 Abrams



Main Battle Tank, \$17.98; MM223, 1/35 scale Ford Mutt M151A2, \$5.98; and MM201A, 1/35 scale German Flakpanzer IV Möbelwagen, \$9.98.

Revell, Inc., 4223 Glencoe Avenue, Venice, CA 90291, has released the following kits from its "History Makers" series: No. 8604, 1/96 scale Tranquillity base, \$12.00; 8605, 1/96 scale Apollo/Saturn V, \$50.00; 8607, 1/292 scale U. S. S. *Burton Island*, \$9.00; 8610, 1/64 scale North American X-15, \$10.00; 8611, 1/32 scale Northrop Hawk, \$12.00; 8613, 1/40 scale Nike Hercules, \$13.90; 8618, 1/24 scale Gemini space capsule, \$20.00; 8624, 1/400 scale U. S. S. *Mission Capistrano*, \$10.00; and 8625, 1/32 scale self-propelled howitzer M55m, \$24.00.

Decals. Krasel Industries, Inc., 1821 East Newport Circle, Santa Ana, CA 92705, announces the release of several sets of Microscale decals: No. 48-116, is for 1/48 scale aircraft, Navy FJ-3Ms, VF-173, VF-125; No. 48-117, for 1/48 scale aircraft, Navy FJ-3Ms, VF-33, VF-214; No. 72-332, for 1/72 scale aircraft, A-7B, VA-125, AW 12, A-7Bs, VA-303, AW 30, VA-305, AW 30; No. 72-333, for 1/72 scale aircraft, Carrier Air Wing 7, F-4J, VF-33, F-9F2, VF-72, A-7E AG 400 CAG; No. 72-334, for 1/72 scale aircraft, F-100C New Mexico ANG, F-100Ds Arkansas ANG, Ohio ANG; and No. 72-335, for 1/72 scale aircraft, A-10s 23TFW/74TFS, 354TFW/356TFS, 57TTW/66FW, 47TFS AFRES, #5 Prod. AFTC and ANGs of New York, Massachusetts, Maryland, and Connecticut.

Paints and adhesives. M. Grumbacher, Inc., 460 West 34th Street, New York, NY 10001, has announced that its Tuffilm aerosol fixative is now available in gloss finish in 4 1/4- and 12 1/4-ounce sizes.

Metalizer Products, 1019 Bonita Street, Tustin, CA 92680, offers a new metallic finishing system called Metalizer. It comes pre-mixed and can be applied with any air-brush, according to the manufacturer. Send a stamped, self-addressed envelope for a descriptive brochure.

Smith Brothers Hobbies, 8941 Reseda Boulevard, Northridge, CA 91324, offers a new liquid masking material, Super Mask, and a new cement, Super Weld. Super Mask works on gloss surfaces, metal plating, metallized surfaces, and on canopies, but cannot be applied over flat (matte) painted surfaces, according to the manufacturer. A 2-ounce bottle of Super Mask is \$2.00. Super

Weld is a fast-drying cement that contains methylene chloride. The manufacturer says it will join acrylic to styrene quite well, with only a slight loss in drying time. A 2-ounce bottle sells for \$1.75.

Figures. Camlyn Marketing, 1640 Fifth Avenue, Santa Monica, CA 90401, is offering a Welsh-made chess set in which characters from *The Lord of the Rings* are used to represent the playing pieces. Each set is handmade. The standard set costs approxi-



mately \$150.00. A deluxe version in contrasting cold-cast bronze is also available for approximately \$450.00.

Imrie/Risley Miniatures, P. O. Box 89, Burnt Hills, NY 12027, announces the release of a 54 mm Santa Claus model (No. L-6) for \$6.95. Imrie/Risley Miniatures also offers a 54 mm Robin Hood grouping (L-1) for \$24.00. Individual figures in the Robin Hood grouping are available separately for \$5.95 each: L-2, Robin Hood; L-3, Will Scarlet; L-4, Little John; and L-5, Friar Tuck. The Robin Hood models can also be used with Imrie/Risley's King Arthur and Men-At-Arms series.

Accessories and diorama materials. Blue Ribbon Models, P. O. Box 888, Marblehead, MA 01945, sells hand-processed Maine woods lichen and seven colors of finely ground foam texture material for dioramas. Send a stamped, self-addressed envelope for descriptive literature.



Tools. Bowsprit, Inc., P. O. Box 130, Glencoe, IL 60022, sells La Guillotine, a desk-top miter shear used to cut small wood strips and moldings to exact lengths and angles. According to Bowsprit, La Guillotine is made of hard maple, has a stainless steel blade, is fully adjustable from 0 through 60 degrees, and can be set up for exact-length multiple cuts. It comes fully assembled with two extra blades; a package of five extra blades is \$1.90. The price of La Guillotine is \$28.50. Add \$1.50 for shipping via UPS, or \$3.50 if shipped to Canada or a United States post office box.

Dremel, P. O. Box 518, Racine, WI 53406, is offering a free bonus of a router attachment and 1/4" straight router bit with the purchase of its Model 3801SP Moto-Tool kit.

SCRATCH BUILDING SUPPLIES

Dry Transfer Lettering

Catalog No. 4 — \$2.00



Clover House
Post Office Box 62D
Sebastopol, California 95472

Lencraft

Our SPECIALTY is out of production & hard to find 1/72 Aircraft-Armour-Decals

- AIRFIX
- USAIRFIX
- MPCAIRFIX
- FROG
- NOVO
- ESCI
- ITALAERI
- MATCHBOX
- HAWK

And more. Send SASE for list.
P.O. BOX 3 CALABASAS, CA 91302

SCALE DOCUMENTATION

SCALE DRAWINGS

PHOTOS - BOOKLETS

MODEL PLANS



BIG DISCOUNTS!

AIRCRAFT, ARMOR, SHIPS, PAINTS, BOOKS

CATALOG & UPDATES - \$1.00

BATTLE HOBBIES
P.O. BOX 184

★ ST. PAUL PARK, MN 55071 ★

BD-5J

1/72nd INJECTION MOLDED PLASTIC KIT. \$2.50 POSTAGE PAID.

299 MODELS

14515-6th AVE. N.E., SEATTLE, WA 98155

Styrene... Fast, Accurate, Versatile

Use precut styrene strips and sheets on your next project.

evergreen
scale models

Send SSAE to Dept. 128 for info
1414-127th Pl. N.E., Suite 107
Bellevue, Washington 98005

The SOURCE For...

Casting resins and
mold making materials

"Make one or
one thousand
with Castolite."

Catalogue \$1.00

CASTOLITE

Dept. FS 382,
P.O. Box 391
Woodstock, IL 60098

Bliss 1983 Ship Model Catalog

JSS Constitution
American Frigate of 1776
\$99.00 • P.O. 212794

General description of the JSS Constitution:
The JSS Constitution is a full-size model of the famous American Frigate. It is a detailed representation of the ship as it appeared in 1776. The model is made of wood and features a detailed interior. It is a great addition to any collection of ship models.

**NEW EDITION!
IT'S YOURS
FREE!**

As we begin
our 151st year,
we are offering
our best by far
and our biggest

CLIP & MAIL THIS TODAY!



Please send me your reg. \$2. new
'83 Ship Model Catalog FREE!

Name: _____

Address: _____

City: _____

State: _____ Zip: _____

My telephone
number is: _____ / _____

AREA CODE NUMBER

FSSM

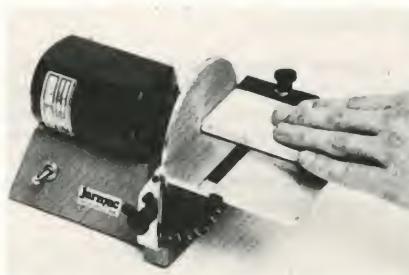
The kit contains a Model 380 variable speed (5,000 to 28,000 rpm) ball bearing Moto-Tool; it comes in a double compartment carrying case with 40 accessories. The free offer has a retail value of \$20.30 and is scheduled to expire December 31, 1982.

Maxon, P. O. Box 243, Carlstadt, NJ 07072, announces its new all-purpose tweezers set (No. H-521). The five tweezers in the set are a 6" retrieving tweezers, 6½" self-closing tweezers, 6" curved solder-utility tweezers, 4¾" stamp tweezers, and a 4½" splinter tweezers. No price is available.



General Hardware Manufacturing Co., Inc., 80 White Street, New York, NY 10013, imports from Switzerland a polypropylene plastic dial caliper (NS-142 med) with a 5" capacity that is suitable for inside, outside, depth, and step measurements. The dial is graduated in increments of .01" and $\frac{1}{16}$ "; it is adjustable for a zero reading. A drill and tap chart is printed on the back of the caliper. A plastic case is included. The tool is also available with metric dial readings (NS-143 mm). The price is \$12.50.

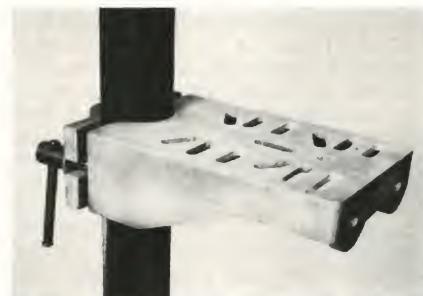
Jarmac, Inc., P. O. Box 2785, Springfield, IL 62708, has released a bench top table saw featuring a 9" x 12" tabletop. The distance between the front table edge and the saw blade is 4" to accommodate wider crosscuts, and rip cuts can be made up to 5" wide. A larger miter guide is also included. The saw has a 1/15 hp, 5,000 rpm motor. Jarmac also has released a 4" tilt-table disc sander. This



all-metal sander uses self-adhesive pads capable of sanding wood, metal, and plastic. The 4" x 5" table tilts up to 45 degrees. The sander has a 1/15 hp, 5,000 rpm motor and a Jarmac heavy-duty, 360-degree miter guide.



Moody Tools, Inc., 42-60 Crompton Avenue, East Greenwich, RI 02818, recently introduced a four-piece pin vise set and four individual pin vises. The set contains pin vises in sizes .000"- .055", .025"- .075", .045"- .125", and .110"- .187". The four-piece set sells for \$27.25, while the individual pin vises range from \$5.90 to \$7.80. Moody Tools also offers a 100-piece miniature tool set (73-0199) for \$119.95. The set comes in a wooden box and features a comprehensive selection of miniature slotted and Phillips screwdrivers, hex drivers, open end and socket wrenches, and splines.



Versatile Improvement Products, Ltd., 4770 Harris Hill Road, Williamsville, NY 14221, has released the Versa-Table, which attaches with no tools to a basement support post and will securely hold almost any mountable tool. The six-pound unit is made of aircraft-specification aluminum and measures 3" x 6" x 9½". It will mount on posts from 2½" to 3¼" in diameter. The Versa-Table is available from the manufacturer at an introductory price of \$24.95; add \$5.00 for handling, shipping, and, where applicable, sales tax.

Catalogs. Aeroprint, 405 Monroe Street, Boonton, NJ 07005, offers a 32-page catalog of aviation art prints for \$1.00.

AIN Plastics, Inc., Department BAC-83, 249 East Sandford Boulevard, P. O. Box 151, Mount Vernon, NY 10550, has released its free 1983 catalog. The 128-page catalog



features items such as acrylics, polycarbonates, Teflon, nylon, Delrin, polyolefins, polyurethanes, and phenolics, plus cements and adhesives.

Albion Scott Ltd., Bercourt House, York Road, Brentford, Middlesex, TW8 OQP, England, offers the following catalogs: military and modeling books, aircraft and aviation, ships and maritime, railroads and model railroading, and cars. The catalogs are free with orders on request; otherwise send \$2.00.

Archer's Hobby World, 18230 Ward Street, Fountain Valley, CA 92708, offers its 20-page 1982-83 catalog for \$3.50. The catalog is updated throughout the year via Archer's newsletter and lists aircraft kits, automobile kits, decals, tools, and paints.

Artistic Airbrush, P. O. Box 3318, Portland, OR 97208, offers a free 1982-83 catalog. The 40-page catalog lists 67 airbrush models, as well as airbrush parts and support equipment, books on airbrushing, and graphic arts supplies.

Bliss Marine, Mail Order/Ship Model Division, Route 128 at Exit 61, Dedham, MA 02026, is offering its 1983 ship model catalog for free; it normally sells for \$2.00.

Brookstone Company, 127 Vose Farm Road, Peterborough, NH 03458, has released its free Fall 1982 catalog. The 68-page catalog offers, among other items, hard-to-find tools.

Classic Motorbooks, P. O. Box 1, Osceola, WI 54020, has released its 1983 catalog of automotive literature. The 120-page catalog costs \$2.00.

Grandt Line Products, Inc., 1040B Shary Court, Concord, CA 94518, offers an "augmentables" flyer for \$.50 plus a stamped, self-addressed envelope. The flyer lists detail parts designed for model railroaders, but which are also suitable for other purposes. Grandt Line says it is interested in suggestions from modelers for new "augmentables," as well as detail parts for aircraft and armor.

Historic Aviation, 3850 Coronation Road, Eagan, MN 55122, has released its 20-page early Fall 1982 catalog listing books of interest to aviation buffs. The catalog sells for \$1.00.

Model Expo Inc., 23 Just Road, Fairfield, NJ 07006, offers its 1982 catalog of historic ship model kits, books, tools, and adhesives. The 32-page catalog costs \$2.00.

The 76-page 1982 MRC-Tamiya catalog from Model Rectifier Corporation, 2500 Woodbridge Avenue, P. O. Box 267, Edison, NJ 08817, sells for \$2.00.

Revell, Inc. 4223 Glencoe Avenue, Venice, CA 90291, sells its 74-page 1982 catalog for \$3.00.

Starline Discount Hobbies, P. O. Box 38, Stanton, CA 90680, offers a catalog of airliner and civil aircraft kits and supplies for \$1.00.

Teka Fine Line Brushes, Inc., 3704 Bedford Avenue, Brooklyn, NY 11229, has a new 24-page catalog with more than 200 photographs and illustrations of brushes, tools, and modeling aids. The \$2.50 price of the catalog is refundable with your first order.

Zenith Aviation Books, P. O. Box 1, Osceola, WI 54020, offers its August 1982 catalog listing more than 300 books. The 30-page catalog is free.

MISCELLANEOUS. Air Sea Graphic, 151 Clapboard Ridge Road, Danbury, CT 06810,

offers five full-color posters in its Classic Warbirds series. The 25" x 35" posters include technical data, historical information, and illustrations. Posters of the Boeing B-17, de Havilland Mosquito, Supermarine Spitfire, Messerschmitt Me 109, and North American P-51 Mustang are available for \$6.95 each plus \$2.80 shipping and handling; two or more prints are \$6.50 each plus \$5.00 shipping and handling. Also available as part of the Classic Warbirds series are black-and-white cutaway drawings of the de Havilland Mosquito, Me 109, North American P-51 Mustang, Supermarine Spitfire, Hawker Hurricane, Fw 190, and S.E.5A. The 17" x 23" drawings show the inner workings of the aircraft. The price is \$4.95 each plus \$2.40 shipping and handling, or two or more for \$4.25 plus \$4.00 shipping and handling. All posters and cutaway drawings are shipped in mailing tubes.

Airbrush World Magazine, P. O. Box 19357, Portland, OR 97219, is a new quarterly publication written "by and for airbrushers." The 32-page magazine contains technique-oriented articles and columns and reviews of books, equipment, and exhibitions. Subscriptions cost \$17.50 per year, and it is also sold at art stores and hobby shops.

America/Gryphon, 4373 Varsity Lane, Houston, TX 77004, sells Albatros trademark T-shirts. The trademark is printed in four colors; the shirts are available for \$9.00 in small, medium, large, and extra large. Add \$1.25 for shipping and handling for the first shirt and \$.75 for each additional shirt.

Fantasy Modeling magazine, published by Fantasy Modeling Inc., 475 Park Avenue South, New York, NY 10016, has announced that it is temporarily suspending publication. The publisher says it will make a final decision concerning the magazine in the next few months and will notify all subscribers at that time.

Model & Allied Publications, Ltd., P. O. Box 35, Bridge Street, Hemel Hempstead, Herts., HP1 1EE, England, announces the release of *Aircraft from the Battle of Britain*, an 80-page, single-issue magazine featuring color profiles, scale drawings, cutaways, and modeling tips about the Spitfire, Hurricane, Beaufighter, Blenheim, Gladiator, Defiant, Me 109, Me 110, Stuka, Ju 88, He 111, and Do 17Z. Each type is shown in 1/72 scale. Model & Allied Publications also is publishing a new quarterly magazine, *New Voyager*. The Autumn 1982 issue contains 84 pages, including 16 in color, on topics such as science fiction/fantasy films, astronomy, science, and science fiction.

Scalecraft, P. O. Box 4231, Whittier, CA 90607, offers an Me 262A camouflage drawing. The 17" x 22" drawing (available folded only) comes with 3 8 1/2" x 11" sheets of stencil information for \$3.00. According to Scalecraft, the drawing shows the splinter pattern camouflage scheme and official sizes and locations of national markings as applied to factory painted aircraft.

Trashbashers Interplanetary, c/o Harold McPherson, 3872 Clover Hill Drive, Bartlett, TN 38134, is offering a free copy of *TRASHnews* upon receipt of a stamped, self-addressed envelope. *TRASHnews* provides a humorous look at modeling.

Wings of Heritage, P. O. Box 9, St. George, UT 84770, sells plans for homebuilt aircraft. Although the plans are actually for flying scale models, they should also be suitable for display models.



A COMPLETE LANDSCAPE SYSTEM
For more information and full color samples of the most complete landscape system in existence. Look for **WOODLAND SCENICS** Reference Manual at Better Hobby Shops.

WOODLAND SCENICS
P. O. Box 266
Shawnee Mission, KS 66201

1st Armored Model Supply Company

Mail Order Only

★ HEADQUARTERS ★

For

SUPER-DETAILERS

&

SCRATCH-BUILDERS

• Grill-Pak • Poly-Rod • Nuts & Bolts

• Scratch-Strip • Sheet Styrene

Send \$1.00 for our catalog.

1st Armored Model Supply Company
P.O. Box 1706, New Rochelle, NY 10802

**Have some extra
kits to sell?
Searching for
a rare kit?**

With a listing in FSM classified advertising you can reach more than 25,000 of your fellow scale modelers!

See page 73 for details.



Roco MINITANKS

A. Kempees

ROCO Minitanks are an extensive assortment of HO scale military miniatures suitable for use in dioramas. They are molded in polystyrene plastic and feature many of the details of the much larger scales.

Choose from a selection of over 200 military vehicles!

SEND \$1.00 FOR A COMPLETE CATALOG AND PRICE LIST

Hensyn Village Q-4A
Budd Lake, NJ 07828

The Unofficial Importer
All 1:87 Perfect HO scale

FSM READER FORUM

Let us know what you think! Comments, suggestions, corrections, and additional information on FSM articles are welcome in this column. Letters submitted for publication should be clearly marked "To the Editor" on both the envelope and the letter, should be typed or hand-printed, and should be no more than 300 words long.

A 1/12 scale racing helmet, anyone? Somewhere on this vast planet (terra firma) there must be a company that puts out a 1/12 scale Formula 1 racing helmet. I have collected all the Tamiya 1/12 scale kits, but alas, they don't have a helmet!

Thanks!

Sean Tellez
Olympia, Wash.

Decal advice from an expert. I call your attention to the kit review of the Minicraft SR-71 in the Fall 1982 issue of FSM. The discussion about the "bluish film" on the decal is unfortunate and will mislead any modeler who attempts to remove the "film." At this point, let me state that Microscale decals do indeed require a solvent to assure proper adhesion. This is because the adhesive on the paper is not really sufficient to stick to the model, and even with the solvent will not permanently stick to an unpainted surface, such as metal foil, clear windows, chrome plating, or unpainted plastic.

The major problem with American decals is the fact that the air pollution organizations in the U. S. will not allow the manufacture of a decal paper with a good adhesive because doing so creates air pollution. On the other hand, the paper imported from England by Briton's has an outstanding adhesive, and it is this that appears as a bluish haze when the decal film is wet. The inks used on Scale-Master decals, and any other American-made decal, are the same, purchased from the same

companies. However, the adhesive used on Briton's paper (called Decafix) is designed specifically for application to plastic kits. The bluish adhesive turns invisible when the decal dries, but while it is drying it becomes sensitive to the pressure between the decal and the model surface, setting up within five minutes to avoid moving around on the model. This reaction causes the decal to suck right down onto the surface.

Now, if the adhesive is washed off, as suggested in the review, the decal will never adhere to the model. The two solutions used in the Micro system [Micro Set and Micro Sol] will soften the decal film, allowing it to conform to the model, but neither solution has any adhesive properties; nothing will hold the decal to the model if only the solutions are used.

The review implies that the cloudy appearance will remain after the decal has dried. This is not true. I don't know the reviewer, Dennis Moore, but I think he's been influenced by others in the case of the decal film, because he obviously hasn't learned that the haze disappears upon drying. If everyone followed his advice [to wash the "bluish film" off the decals before application], the entire plastic industry in the U. S. would be in trouble, because Decafix decal paper is becoming the standard of the kit manufacturers.

I strongly recommend that modelers not wash the adhesive off their decals. If a Decafix decal doesn't adhere everywhere, the decal can be softened by applying plain denatured alcohol (about 98 cents a pint). The alcohol softens the film, but does nothing to the adhesive, which remains effective.

When the decal has been allowed to dry for at least 12 hours (30 minutes during a California heat wave!), the entire model should be wiped with a damp cloth to remove the excess cement (which will be invisible, but nonetheless there) to avoid a reaction with the paint. This may seem strange, but while adhesive under the decal does not harm the paint, adhesive resi-

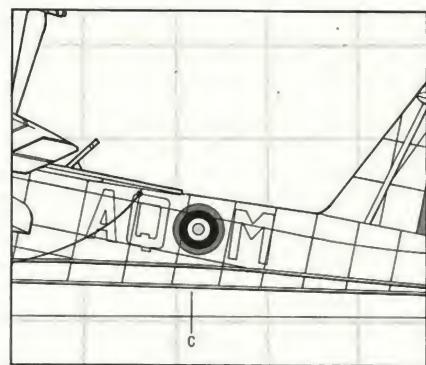
due left on the paint and exposed to air will cause the paint to turn brown and possibly craze the paint. This is true of all decal adhesives, not just Decafix.

*Lloyd S. Jones
Scale-Master Decals
Costa Mesa, Calif.*

Correction: Walrus markings. Naturally I was intrigued to see how my Walrus picture was used and especially to find that Roscoe Creed had chosen 276 Air Sea Rescue Squadron for his subject. The great regret is that he didn't research enough to sort out the colour and markings. He has split the Squadron ident letters which were "AQ," and has not emphasized the unique five-colour scheme. The 276 Squadron shared our own dispersal at Harrowbeer so I had a lot of connections with them, sufficient to know what should be right. Incidentally it is not correct to refer to the Walrus in an ASR capacity during the Battle of Britain. Nearly all of 276 Squadron was established long after 1940, to rescue bomber crews, particularly from daylight raids.

*R. G. Moulton, Managing Director
Model Division
Model & Allied Publications
Hemel Hempstead, Herts., England*

[Ron's right, of course, and here's how the markings on FSM's Supermarine Walrus drawings should have appeared. — B. H.]



More FSM Workbench Reviews. Just wanted to write, to give my opinion of your latest issue of FINE SCALE MODELER. I am extremely pleased with the fact that you people are thoughtful enough to mail your magazines in an envelope, which protects the magazine, and eliminates the need to stick the address label on the cover. For this facet alone, I think you are to be commended. In regard to the contents of the issue, I was quite pleased with what I found. The articles are quite well done, informative, and clearly illustrated. I do wish, however, to make several suggestions in regard to future issues.

Firstly, I think your columns on kit

AIRFIX · BANDAI · BELT BUCKLES · BOOKS · BRUMM · CROWN · EIDAI/GRIP · EKO · ESCI · FORMA PLANES · FROG/NOVO · FUJIMI · HASEGAWA · HELLER · KOTOVSKY · KROVOLAZAVOD/CZECH · LS · MAGAZINES · MATCHBOX · METAGAMING · MICRO SCALE DEALS · NICHIMO · PEERLESS · RAREPLANES · ROBO · ROSKOPF · SQUADRON/SIGNAL PUBLICATIONS · TAMIYA · TESTORS · TSR GAMES & RULES · W.I.M.B. WOODEN MODELS · IMAI · ITALERI · VALIANT CLAN PRINTS · WATERLINE SHIPS · WIKING · YAHAN

W. R. W.

IMPORTS, INC.

ALL INQUIRIES WELCOME

10 South Havana #108
Aurora, CO 80012
303/340-3844

Catalog \$1.00

SCALE MODEL KITS & ACCESSORIES
FROM AROUND THE WORLD

reviews should be expanded. Too many times, I have seen people who were disappointed with kits that were given excellent reviews, but were not nearly as good, in fact, as the reviewer would have us believe, thus necessitating the need to make major renovations, additions, and conversions to the kit.

I would really love to see some good, honest kit reviews, good or bad, so at least the modeler knows in advance what he is spending a considerable amount of money on. I think this line of thought should be one of your priorities. Models are too expensive now to buy on reputation only. Each must be judged on its own merit, and either weather the criticism or enjoy the praise.

Secondly, I really think you should consider expanding the size of your issues, since you are not a monthly publication. You could go at least a dozen more pages, and not suffer the least for it.

I would also like to see a color center spread as a regular feature. Not on the more frequently seen aircraft, armor, ships, or figures, but on the lesser-seen ones that there is not much info available on. You could feature a different item each issue, such as an aircraft, tank, soft-skin, artillery piece, etc., giving a good selection of drawings in scale, and showing minute details that

are not found in other articles. For example, ever try to find a top shot of a Hanomag, or other open-top vehicle, showing the interior layout? It's next to impossible. Sure, the Panthers and other popular vehicles have plenty of good shots, but the lesser-known vehicles, that we try to scratchbuild, seem to have been lost to posterity.

These are the types of articles that are sorely needed in U. S. publications. Magazines featuring page after page of dioramas are nice for kids, as it gives them ideas to attempt, but I think your magazine should cater to a more sophisticated modeler, the ones who need the information to put the ideas together, and accurately. This is the kind of magazine I want. I see plenty of other modelers' work, firsthand, so I don't need to see pages of dioramas in magazines too!

I also like your idea of including addresses of suppliers in your articles. This makes it much easier to send away for info on products seen in your articles. And including the prices is another very helpful practice.

I am hoping your next issue is even better than this one. Keep up the good work, and keep your articles as honest as you possibly can. This, more than anything else, will make you a winner.

Dennis J. Sheehan
Sunnyside, N.Y.

A tip of the paint jar lid? My "cap" (a paint jar lid) is off to all the folks at FSM for a fine magazine. It is truly a modeler's magazine with the scale enthusiast in mind. A magazine of this caliber has been needed for a long time. I read the Fall Charter Issue from cover to cover.

Mr. Berton's "Fez Seller" was clear and to the point without excess photos or narration. I especially liked John Mahaffey and Jack Gurner's article on weathering older trucks, as 1/25 scale trucks are my forte. Now how about running an extension of your Tips and Techniques column with photos and remarks of projects from us not-so-well-known builders?

Keep up the fine scale work.

Paul Justy
Grafton, Ohio

[Take a look at this issue's Tips and Techniques, Paul, and see if it includes the variety of names you had in mind. FSM fully intends to publish lots of material from "not-so-well-known builders," because they do some of the finest work! Also, in the Spring issue we plan to introduce "FSM Showcase," which will be a one- or two-page spread intended to show off an unusual model without taking the space required to describe each and every step in its construction. — B. H.]

FSM

YOU'RE GONNA FIND WHAT YOU WANT IN . . . Volume 4 The Source Book[®]

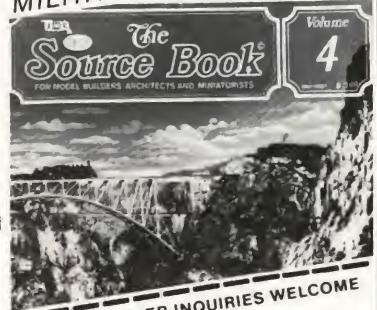
- SCRATCHBUILDER SUPPLIES
- TOOLS, PAINTS & FINISHES
- SCENIC DETAILS & SCENERY MATERIAL
- "HOW-TO" BOOKS
- ELECTRONICS
- ALL SCALES

The first catalog ever compiled for just the model builder...amateur or professional, engineer, diorama or display builder, architectural model builder, model railroader, dollhouse maker, miniaturist, etc...this is YOUR SOURCE. We have tools and paints and parts and structural shapes and detailing accessories and electrical components and...well, you get the point. Regardless of your scale, you can look to this extensively illustrated, 136 page catalog as your personal reference and source for most of your model building needs. And, in addition to products from over 80 different manufacturers, we have included some modeling information such as "How To Weather" woods and plastics as well as Fractional and Decimal Equivalent Charts.

No workshop, at home or office, should be without this book. And, we didn't load it up with a lot of stuff that doesn't pertain to building models. See the DIFFERENCE for yourself.

Just \$ 3.00 Each (Postpaid)

- FIGURES AND VEHICLES
- MILITARY MINIATURES



DEALER INQUIRIES WELCOME



Please send me _____

DEPT. F-1, 1025 INDUSTRIAL DRIVE, BENSENVILLE, IL 60106-1297

NAME _____
STREET ADDRESS _____
CITY _____

STATE _____

ZIP: _____



JMC/CON-COR
DEPARTMENT: F-1
1025 INDUSTRIAL DRIVE
BENSENVILLE, IL 60106-1297
PHONE: (312) 595-0210



All photos, FINESCALE MODELER: A. L. Schmidt, unless otherwise credited

Every FSM Workbench Review is a first-hand report by a modeler who has actually built the kit or used the product. While our reviewers are encouraged to compare the products to similar ones in their experience, evaluation is of secondary importance; the reviewer's primary goal is to provide a detailed description of the product so *FSM* readers can evaluate it for themselves. Models shown in Workbench Reviews are built straight from the box.

Kit: No. MM-220, U. S. M48A3 Patton tank

Scale: 1/35

Manufacturer: Tamiya, imported by Model Rectifier Corporation, 2500 Woodbridge Ave., Edison, NJ 08817

Price: \$14.98.

THIS VIETNAM-ERA tank kit consists of 278 parts on five olive drab styrene and two polyvinyl sprues. Inspecting the parts before beginning construction, I found all of them well detailed. If anything, the polyvinyl tracks show greater detail than past Tamiya kits. The hull comes in two parts, upper and lower, and the turret also consists of two parts, the turret ring (lower) and the turret itself (upper). Many of the smaller details are separate parts instead of molded on, a big improvement over Tamiya kits of some years back.

The only areas I found lacking were the inside of the turret (which I feel should at least include a breech for the 90 mm gun, because the lack of it is visible through the commander's cu-



pola), the hatches (they should be operable), and the inside track detail where the track ends overlap to be joined (it's easy to hide). I also didn't like the slots in the hull intended to be used for motorizing the model, but these were easy to fill with sheet plastic and putty. Nothing was missing from the kit.

The only defect I found in the parts was some minor scratching on the clear plastic lens for the searchlight, in spite of the fact that the clear parts were packaged in a bag by themselves to prevent such damage. The scratches were shallow enough that I could have buffed them out, but I had planned to add a cover to the searchlight anyway. The white, yellow, and red decals come on a sheet that measures $2\frac{3}{4}'' \times 4''$ and includes markings for both U. S. Army and Marine Corps versions.

There are six pages of instructions (five of them for assembly) on sheets measuring $6\frac{1}{4}'' \times 10\frac{1}{4}''$. Construction is organized into 13 steps, most illustrated by perspective drawings. The

instructions include three photos of an assembled tank kit and plan and elevation drawings that show paint colors and decal placement. I found the instructions adequate. The box art is mainly there for decoration and is not useful for painting or decaling the finished model.

The kit went together with little or no difficulty. Other than removing some mold seams and filling a few mold marks I did not have to rework any of the parts to make them fit properly. With one very minor exception I followed the instructions exactly; simply for convenience, I added parts A13, A14, B20, and B21 to the hull before adding the suspension arms and road wheels. The kit did not include antennas, so I made two from stretched sprue. If I were to build this kit again, the only things I would do differently would be to substitute Micro Kristal-Kleer "glass" for the periscopes and headlights, make the hatches working, detail the inside surfaces of the hatches, and make a mantlet cover from tissue.

I had little reference material available in my library on the M48A3, but the kit appears well-scaled and the proportions coincide with the photos I checked.

I liked the kit, and rate it above average compared to other tank kits I have built. A person with a couple of years of modeling experience should be able to build it into an attractive model. I spent a total of 38 hours building my model — 20 hours for construction and 18 hours for painting. *Glenn Kreinus*

Kit: Douglas A2D-1 Skyshark

Scale: 1/72

Manufacturer: RAREplanes, 69 Redstone Hill, Surrey, England

Price: \$8.00, including postage from England.

THIS VACUUM-FORMED kit consists of 26 parts embossed on a single sheet of .040" white plastic, two canopy

parts vacuum-formed from .025" clear plastic, and 15 injection-molded parts on a single sprue. The injection-molded parts are a feature of recent RAREplanes kits. No decals are included.

The vacuum-formed parts are excellent, featuring sharp edges, fine panel lines, and a minimum of molding pips. The canopy is good, but the headrest molded with it is not usable due to poor

fit. The injection-molded parts are good to average on one side only — the other side is flat. Although the kit is complete by vacuum-formed standards, numerous details must be scratchbuilt.

The four pages of instructions measure $7\frac{1}{2}'' \times 9''$ and provide only a general approach to building the model; there are no step-by-step directions. There is one photo of a completed

METALIZER™



THE ULTIMATE IN MODEL METALIZING FINISHES

NEW IMPROVED FORMULA

A unique product for unique models. From the people who invented the world's first plastic model metalizing finish. No other metalizing finish offers you the versatility of Metalizer. For all types of aircraft, car, ship, train, armour and science fiction models. Airbrush on and buff to a brilliant sheen in minutes. Metalizer is a tough and durable waterproof finish. With 10 metal shades, sealer and 2 dayglo colors to choose from.

SEND STAMPED & SELF ADDRESSED ENVELOPE FOR METALIZER BROCHURE
Dealer and Distributor Inquiries Invited

METALIZER

**GET:
METALIZED**

- 1. ALUMINUM PLATE
- 2. STEEL
- 3. MAGNESIUM
- 4. TITANIUM
- 5. GUN METAL
- 6. EXHAUST
- 7. SEALER
- 10. DAYGLO RED
- 11. DAYGLO ORANGE
- 12. DAYGLO ANODIZED GREY
- 13. *METALLIC BLUE
- 14. *GOLD
- 15. *BURNET METAL

*NEW FOR 1982

METALIZER PRODUCTS
1019 BONITA ST.
TUSTIN, CA 92680



BUILDING FLATS
M-103 1/35 Scale \$9.99

BUILD THEM UP OR BOMB THEM OUT

Cast plaster building with plastic window and door castings.

Mail orders add 2.00 P+H or ask your hobby shop for LST PRODUCTS

Texas residents add sales tax
Send Ig SSAE for catalog

LST PRODUCTS
6020 JESSAMINE #101, HOUSTON, TX 77081

BOEING 247



MARTIN B-10B



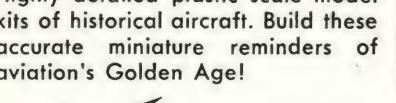
NORTHROP GAMMA



CURTISS C-46



DOUGLAS WORLD CRUISER



Highly detailed plastic scale model kits of historical aircraft. Build these accurate miniature reminders of aviation's Golden Age!

WILLIAMS BROS. INC.

SEND \$1 FOR FULLY ILLUSTRATED CATALOG DEPT. FS
181 PAWNEE ST. SAN MARCOS, CALIFORNIA • 92069

model, and the instructions also include a good 1/72 scale three-view drawing, an exploded view, and a list of reference material.

The fit of the fuselage halves is good, but the wing-to-fuselage joints require considerable filling. I found that the forward section of the fuselage under the canopy required minor reshaping to achieve a good fit for the canopy. I also found that the method suggested for installing the spinner assembly resulted in the rear spinner having a loose fit. I glued both spinner assemblies together and installed the entire unit into a clay block placed in the nose before assembling the fuselage halves.

Close inspection of Douglas plans and various photographs indicated that the engine air intakes were too shallow. After cutting away the inner intake walls, I formed new, deeper intakes from Bondo putty by casting the Bondo around a clay plug, then removing the plug. I used Green Stuff to fair the intakes into the fuselage.

As with most vacuum-formed kits, achieving scale-thickness trailing edges is a problem. After thinning the inside areas of the parts as much as I dared, I assembled the wing and horizontal stabilizers, then filed the trailing edges to the desired thicknesses. Where necessary I re-scribed panel lines.

The kit provides two wing-mounted external fuel tanks and pylon parts for a centerline tank. Using one of the kit tanks as a pattern, I made a centerline tank from laminated styrene sheet.

I discarded the injection-molded landing gears, substituting new ones made from bent paper clip wire wrapped with strips of paper. I used the cast main wheels but discarded the separate tail wheel, using instead the wheel that is molded into the fuselage halves. I discarded the kit's rocket racks because they were oversize and crude, and scratchbuilt new ones. I also added clear wing navigation lights. Straight pins were used for guns and pitot tubes, thread for brake lines.

The decals I used included an old Authentic sheet (No. 6, National Insignias), "Navy" from an old "Aircraft in Review" sheet, and Microscale sheet RH-70 (railroad lettering).

A check of the overall dimensions of the completed model against a set of plans obtained from Douglas indicates that the kit is virtually right on the money: The largest overall error is in the fuselage, which is a scale 4" too short — about .05" off in 1/72 scale. The most serious error I found was a difference in height between the two engine exhaust openings of $1/16$ " (the port duct is higher; they should be at the same height on both sides). I did not fix this because my fuselage assembly was already complete when I discovered the error. Were I to build this model again, I would correct the problem by cutting



out the higher exhaust as a complete panel, then re-installing it in a lower position and filling the resulting gap.

The finished model is an attractive addition to any collection of post-WWII aircraft. I particularly liked the unusual subject matter, the molded propeller blades and wheels, the good plans, and the overall high quality of the vacuum-formed parts. My biggest complaints were the misaligned exhaust ducts and poor rocket racks and other flat-sided castings. I spent 30 to 40 hours building this kit, about right for a good-quality vacuum-formed kit



of this size. I would not hesitate to recommend the kit to any builder who has considerable experience with vacuum-formed models.

E. R. Staszak



Both photos, Wayne E. Moyer

Kit: Goldenrod land speed record car

Scale: 1/43

Manufacturer: Mayes Models, available from Valley Plaza Hobbies, 12160 Hamlin St., North Hollywood, CA 91606

Price: \$45.00.

THIS UNUSUAL machine, powered by four 426 cu. in. Chrysler Hemi V-8s, was used in 1965 to establish the world land speed record for wheel-driven vehicles, a record which still stands. The 32'-long, four-ton "Goldenrod" was built by the Summers brothers of Ontario, California.

The kit consists of 20 cast white metal parts on one tree, rubber tires, and a vacuum-formed plastic windshield. The model has a one-piece body

shell (a very large part, considering the centrifugal casting method used to make it), a one-piece belly pan and chassis, and a seat, instrument panel, and steering wheel. Optional long and short intake ducts fit into the body shell from inside. The quality of the parts is excellent, and the level of detail is average — there are small mold lines along the bottom of the body shell and around the belly pan. The kit includes a 2" x 6" decal sheet.

The two pages of written material are only general instructions, not step-by-step assembly and finishing procedures. One sheet provides a large exploded view that shows how the major parts are to be assembled and where the decals are to be placed. The data sheet furnishes historical background

MAIL ORDER DISCOUNT

The following is a small selection of our stock.

MPG 4651 1 144 Space Shuttle Columbia	7.03
MPG 4701 1 144 United Boeing 737	2.78
MPG 4702 1 144 United Boeing 727	2.78
MPG 4703 1 144 United Boeing 707	2.78
MPG 4731 1 144 Eastern Lockheed Tri Star	4.26
MPG 4732 1 144 American Douglas DC-10	4.26
MPG 4733 1 144 British Airways Concorde	4.26
MPG 4751 1 144 Pan Am Boeing 747	7.03
MPG 4752 1 144 United Boeing 747	7.03
MPG 4753 1 144 TWA Boeing 747	7.03
MPG 4754 1 72 Focke Wulf FW109A	1.67
MPG 4809 1 72 Focke Wulf FW190A	1.67
MPG 4903 1 72 Douglas Dauntless	1.67
MPG 4904 1 72 F6F Hellcat	1.67
MPG 4905 1 72 A-1 Skyraider	1.67
MPG 4906 1 72 Messerschmitt Bf109E	1.67
MPG 4907 1 72 Spitfire Mk VI	1.67
MPG 4908 1 72 P-51B Mustang	1.67
MPG 4910 1 72 P-51D Mustang	1.67
MPG 4912 1 72 Boeing Sea Knight	2.04
MPG 4913 1 72 Henschel Hs126	2.04
MPG 4914 1 72 F-8 Shooting Star	2.04
MPG 4920 1 72 Mig 23 Flogger	2.41
MPG 4922 1 72 Sikorsky Sea King	2.41
MPG 4923 1 72 Ju87B Stuka	2.41
MPG 4924 1 72 Lockheed P-38 Lightning	3.33
MPG 4925 1 72 B-25 Mitchell	3.33
MPG 4927 1 72 McDonnell F-4 Phantom	3.33
MPG 4933 1 72 Black Widow	3.33
MPG 4934 1 72 F-18 Hornet	3.33
MPG 4935 1 72 F-28 Banshee	3.33
MPG 4936 1 72 F-16 Falcon	3.33
MPG 4941 1 72 Super Jolly Green Giant	4.07
MPG 4942 1 72 Boeing B-52 Fortress	4.07
MPG 4943 1 72 B-24 Liberator	4.07
MPG 4944 1 72 F-14 Tomcat	4.07
MPG 4945 1 72 S-3A Viking	4.07
MPG 4946 1 72 F-5 Eagle	4.07
MPG 4950 1 72 B-29 Superfortress	6.66
MPG 4952 1 72 C-130 Hercules	6.66
MPG 4953 1 72 F-105 Thunderchief	6.66
MPG 4954 1 72 F-105 Thunderchief	6.66
OTAKI A1 1 144 F-101A Voodoo USAF	1.47
OTAKI A2 1 144 F-100D Super Sabre	1.47
OTAKI A3 1 144 F-8 Crusader	1.47
OTAKI A4 1 144 F-4B Phantom	1.47
OTAKI A5 1 144 F-4C Phantom	1.47
OTAKI A6 1 144 F-5A Freedom Fighter	1.47
OTAKI 2-1 144 Lockheed C-5A Galaxy	16.27
OTAKI 2-3 1 144 Lockheed C-5A Galaxy	19.23
OTAKI 2-7 1 144 German Flying Boat Do-X	1.47
OTAKI 2-8 1 144 F-14A Eagle	1.47
OTAKI 2-9 1 144 F-14A Tomcat	1.47
OTAKI 2-20 1 144 F-105 Thunderchief	1.47
OTAKI 2-21 1 144 F-105 Thunderchief	1.47
OTAKI 2-22 1 144 N.A. RA-50 Vigilante	1.47
OTAKI 2-23 1 144 F-102 Delta Dagger	1.47
OTAKI 2-4 1 48 Mitsubishi A6M5 Zeke	5.91
OTAKI 2-5 1 48 Nakajima Ki-43-III Oscar	5.91
OTAKI 2-6 1 48 Kawasaki Ki-61-Ta Tony	5.91
OTAKI 2-7 1 48 Kawasaki N1K1-J George	5.91
OTAKI 2-8 1 48 Willow	5.91
OTAKI 2-9 1 48 Nakajima Ki-44-III Jack	5.91
OTAKI 2-10 1 48 Nakajima Ki-44-III Tojo	5.91
OTAKI 2-11 1 48 Nakajima Ki-84-A Frank	5.91
OTAKI 2-15 1 48 Kawasaki Ki-100-B Goshiki	5.91
OTAKI 2-16 1 48 Curtiss Warhawk	5.91
OTAKI 2-24 1 48 Supermarine Spitfire Mk B	5.91
OTAKI 2-25 1 48 Supermarine Spitfire Mk C	5.91
OTAKI 2-26 1 48 Focke Wulf FW 190A-8	5.91
OTAKI 2-27 1 48 Vought F4U-1A Corsair	5.91
OTAKI 2-28 1 48 Republic P-47D Thunderbolt	5.91
OTAKI 2-29 1 48 Grumman F6F-3 Hellcat	5.91
OTAKI 2-30 1 48 F-16A Fighting Bomber	5.91
REVELL 8603 1 112 Martin PBM-5 Mariner	6.66
REVELL 8610 1 64 North American X-15	7.40
REVELL 8611 1 32 Boeing AD-6 (A-1) Skyraider	8.08
REVELL 8616 1 32 Hawker MK-1B Tornado	8.08
REVELL 8617 1 32 Messerschmitt Bf-109E-4B	16.28
REVELL 8619 1 40 Bell X-5	6.66
REVELL 8620 1 65 Douglas X-3 Stiletto	6.66
REVELL 8621 1 136 Martin P-6M Seamaстер	6.66
REVELL 8604 1 48 Tranquility Base	8.88
REVELL 8605 1 96 Apollo Saturn	37.00
REVELL 8606 1 96 Apollo Saturn Space Capsule	40.00
REVELL 8601 1 54 German V-2 Missile	8.88
REVELL 8602 1 47 Bomarc IM-99	9.62
REVELL 8611 1 40 Northrop Hawk	8.88
REVELL 8612 1 96 Northrop Snark	8.14
REVELL 8613 1 40 Nike Hercules	10.36
REVELL 8606 Allison Turbo Prop	17.76
REVELL 8614 WASP Radial Aircraft Engine	32.93
REVELL 8615 1 232 F-105 Thunderchief	13.22
REVELL 4423 1 72 P-47D Razorback Thunderbolt	4.81
REVELL 4719 1 32 F-15E Strike Eagle	14.88
REVELL 4720 1 32 Israeli F-16 Stores	8.14
TESTOR 564 1 32 SR-71 Blackbird	11.10
TESTOR 662 1 72 RF-4 Phantom	4.44
TESTOR 661 1 32 F-4 Phantom	12.00
TOMY 1 32 Nakajima Ki-44-III Hayate (Frank)	12.00
TOMY 1 32 Nakajima Ki-44-III Shiden Kai (George)	12.00
MONOGRAM 5426 1 72 Tornado Swing Wing	3.52
MONOGRAM 5425 1 72 Mirage 2000	5.00
MONOGRAM 5806 1 72 F-105G Wild Weasel	3.33
MINICRAFT 1 201 1 72 Thunderbird F-16	3.70
MINICRAFT 1 202 1 72 F-16A Fighting Falcon	4.80
MINICRAFT 1 209 1 72 Blue Angel History Set	14.80
MINICRAFT 1 212 1 72 Hughes AH-6 Apache Helicopter	3.70
MINICRAFT 1 203 1 48 Hughes 500D Helicopter	3.33
MINICRAFT 1 204 1 48 Hughes 500MD TOW Helicopter	3.33
MINICRAFT 1 205 1 48 Hughes 500MD ASW Helicopter	3.33
MINICRAFT 1 207 1 48 McDonnell Douglas F-4B N Phantom	7.40
MINICRAFT 1 210 1 48 McDonnell Douglas F-4C D Phantom	7.40
MINICRAFT 1 211 1 48 McDonnell Douglas F-4J S Phantom	7.40

Add \$1.49 to all orders totaling under \$32.00

ORDER FROM: R. M. Groene

Dept. FSW83

867 Atlantic Street

Lindenhurst, NY 11757

Phone COD ORDERS Accepted

PHONE: 516-957-5923 — 2 to 5 PM Mon. to Fri.

Mail COD Orders: Please send 15% at time of order or \$4, whichever is greater. Add \$1.50 to all COD orders.

QUESTIONS? Please SSAE.

We ship world-wide. Rates in our catalog.

Send \$4 for 164-page Discount List of 130 companies.

Send \$1 for Discount Catalog of Home Computers

Send 40c for List of Discount Lists.

Open to the public—pick-up and save (phone first).

Prices subject to change without notice.

Prices based on retail prices in effect on 10/12/82.

Send \$1 for Mini-Catalog.

on the vehicle and lists dimensions and specifications.

This is an easy kit. I checked the fit of all parts, painted everything before assembly, inserted the air intakes, fitted the interior parts, and dropped the body onto the chassis. I did not encounter any problems, except that my kit was missing two wheels, which were quickly replaced by the dealer that I bought the kit from.

All of the cast parts fit well. The vacuum-formed clear windshield re-

quires careful trim-and-check work to cut to size without going too small.

The finished model checks out well against the dimensions given on the data sheet, although it is approximately .12" too short overall. This scales out to approximately 1/43.7 scale versus the correct 1/43.5 (1/43 scale is actually 7 mm = 1', 1/43.5 scale). The wheelbase is .08" short, also 1/43.7, and the track is a shade narrow, which is unavoidable because of body sidewall thickness.

If I were to build this kit again the only change I would make would be to drill out the exhaust stacks. I might also consider opening the cockpit hatch, but I probably wouldn't because the gap would be out of scale and the model actually looks better buttoned up.

Overall, this is a fine kit that is accurately made and "looks right" when finished, and I recommend it. It took me 6 hours to build; most metal cars I've built run 8-10 hours.

Wayne E. Moyer

Kit: No. 17, Avia B.21

Scale: 1/72

Manufacturer: K.P. (Kovozavody Prostejov, Czechoslovakia)

Price: \$6.00.

EACH NEW RELEASE from K.P. shows some small amount of improvement, and their new Avia B.21 is one of the best Communist-block kits I've built. The K.P. line includes some exotic Czech and Soviet birds that should not be overlooked by avid modelers.

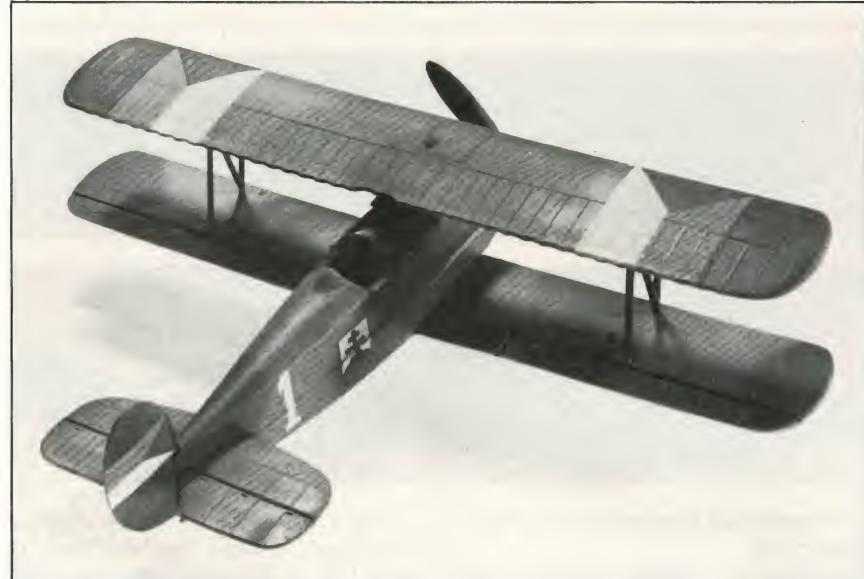
This kit is made of light gray styrene of average hardness. There are 33 parts on 3 trees. The 3 1/2" x 5" decal sheet is printed in red, white, blue, and black and includes schemes for four planes. The detailed painting and decaling instructions are in English, German, and Czechoslovakian.

The B.21 kit has the usual biplane breakdown, and I found the parts to be above average. The level of detail is excellent for an Eastern European kit, comparable to the molding quality of a Frog or Airfix kit of a few years ago. The quality of the clear parts is fair.

The 12" x 14" instruction sheet is printed on both sides, but includes no step-by-step directions or photos. There are drawings that show the parts sprues and two good exploded views of assembly, but the bulk of the written directions are given over to history and color scheme information. The box art is quite good and shows all four planes you can make using the kit decals.

Nothing was missing from my kit, and the model went together as shown in the drawings. There were gaps between the lower wing and the fuselage and the top of the cowling and fuselage, and I filled these with Duratite Plastic Putty. I also used Duratite to fill the seam between the propeller bushing (No. 5a) and the fuselage. I filled a small gap between the horizontal stabilizer (No. 14) and the fuselage by painting Elmer's Glue-All into the seam. I left the guns and exhaust pipes off until the lower wing and cowling assemblies were finished to prevent breakage. The fit of the struts — often a problem area with biplanes — was excellent, and the decals worked well.

No material is provided for rigging, and my model shown in the photos does



not include any. However, the plane should be rigged, and I plan to add stretched sprue wires to mine. If I built another one of these I would also add seat belts. The radiator has a large sink mark on it, and I suggest using a piece of brass drain mesh as a new grille.

The model is right on scale, but I think that in translating or printing the instructions the listings for the upper and lower wing lengths were reversed. The drawings clearly show the lower wing as being longer, and the spans listed for the lower wing match the upper on the model and vice versa.

Drawings in the Arco-Aircam book, *Czechoslovakian Air Force 1918-1970*, also show a longer lower wing. As for scale thicknesses, a few parts are a bit heavier than they should be.

I liked this kit because it went together well and because of its rare subject; it is an injection-molded model of a plane that might not even rate the attention of a vacuum-formed kit company in the West. The model is appropriate for an intermediate-level modeler, someone with a couple of years modeling experience, and the 11 hours I spent on it were about average compared with similar kits. Dennis Moore

Kit: No. 343, Saab A 32A or S 32C

Lansen

Scale: 1/72

Manufacturer: Heller, imported by Polk's Model Craft Hobbies, Inc., 346 Bergen Ave., Jersey City, NJ 07304

Price: \$10.95.

FIRST PLACED IN SERVICE late in 1955, the Saab 32 Lansen was the first Swedish aircraft to break the sound barrier. Over the next seven years Saab produced 450 Lansen in three major variants: the A 32A attack, the J 32B all-weather fighter, and the S 32C photo recon version. This Heller kit can be built as either an A 32A or an S 32C.

The kit is molded in silver-gray styrene and consists of 52 parts on four sprues. The breakdown of the model is fairly standard for aircraft: The fuselage is molded as two halves and the wings are molded in three pieces, with the completed wing subassembly fitting into the bottom of the fuselage. The underside of the nose for the C version is molded in clear plastic because of the camera windows.

The parts are of what I would consider average quality; their detail is good, but mold marks are somewhat heavy. Panel lines are raised and delicate. The clear parts are well done, but their attachment points to their sprue are much too thick. The canopy on my



kit included a prominent stress mark at the point of attachment. The scale thicknesses of parts, especially where they are exposed edge-on, are okay.

There are four pages of instructions on two sheets, measuring 12" x 16" and 8" x 12". The assembly directions are organized into seven steps illustrated with exploded-view drawings, and there are two versions of Step 5 depending on which variant of the plane you are building. There are no photos and no written assembly sequence — symbols and arrows are used to overcome the language barrier.

The instructions include two sets of three-view drawings that show paint

schemes. These drawings include numbers that refer to a Heller paint list on the second instruction sheet, but only the last two of the four digits in the numbers match (I have found this system used on other recent Heller kits). A short history of the plane is provided in four languages.

The box art shows both color schemes in color and is helpful, except that the national markings shown on the A version are bordered in orange on the box but are yellow on the decal sheet. The decal sheet measures 3" x 4" and is printed in blue, yellow, red, and black. The decals are thin and have little film.

The kit builds into a handsome model,

Falklands War Inquiry!

Save \$3.00

Illustration of a soldier in a beret and camouflage uniform.

In the twelve weeks since the end of this remarkable battle, Osprey Publishing has had editors, authors and artists researching and analysing a wealth of material, fact, fiction, rumour, gossip and journalistic jingoism, to produce what should prove to be the finest set of factual accounts of the battle.

The 48-page books contain a detailed account of each aspect of the campaign, and of the forces of both sides — who, where, when, with what and how. Each is illustrated with about 40 photographs, maps and diagrams. Each contains eight pages of full color photographs or specially commissioned artwork detailing uniforms, protective clothing, equipment, weapons, insignia and color schemes. Together the three books represent some 45,000 words of informed comment, about 120 B&W photographs and 24 pages of full color — the specifics researched on both sides of the South Atlantic, since the end of the campaign, by specialists who know what questions to ask and where to ask them.

You can purchase the complete set of three for only \$20.85, \$3.00 below list price, and not available anywhere else for this price. Send for your "Battle for the Falklands" books today. And remember, We Guarantee your complete satisfaction!



Please send me the following books:

- 133 BATTLE FOR THE FALKLANDS: Land Forces at \$7.95
- 134 BATTLE FOR THE FALKLANDS: Naval Forces at \$7.95
- 135 BATTLE FOR THE FALKLANDS: Air Forces at \$7.95
- All three FALKLANDS books for the special price of \$20.85

Total amount I am ordering. _____
Plus \$2.00 Shipping & Handling (Texas Residents: Add 5% Sales Tax, Please) _____
Total Amount Enclosed (In U.S. Funds drawn on a U.S. Bank) _____

ORDER FORM

NAME _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

SIGNATURE _____

(For your protection sign before mailing. Thank you.)

Please Mail To:

Squadron Mail Order, Dept. 15F
1115 Crowley Drive
Carrollton, Texas 75006



but it doesn't build itself. I chose to build the S 32C photo recon version, and the fit on most of the parts was good, except for the camera pack (unfortunately, its worst areas were in the air intake channels, just where it's hardest to work!). The canopy requires sanding on the bottom at the rear and some thinning on the inside in front and to the right of the pilot. The seats

must be sanded because of rough sides, and the sink holes in the headrests are so deep that they must be puttied. The fuselage air intakes are rough and must be sanded. The air intake fences did not fit well, so I painted Elmer's into the gaps. Parts 33 and 34 are so small that they can be sanded only with difficulty.

The only item I considered missing was a strange-looking radar dome or belly tank shown on the box art which wasn't included as a part of the kit. If you have an old Airfix Boomerang kit around, you might use its belly tank.

I painted the wings, fuselage, and horizontal stabilizers before gluing them together because the leading edges of the wings, tail, and horizontal stabilizers are silver. I used Liqui-a-plate for these surfaces and do not like to try to mask over it. Incidentally, a few years

ago a fellow modeler warned me that a vapor-honing process used to make some parts of the molds for Heller kits would cause terrible appearance problems with metallic paints. I was curious to see if this was true, and if it was the case with the Lansen kit, so I tested some Liqui-a-plate aluminum on the unused nose panel for the A version of this plane (see small photo) and found no unusual pitting on the painted surface. I used the same paint on the exhaust pipe and on the leading edges of the wings and tail pieces with no ill effects, so as far as I'm concerned the warning can be dismissed as an old wives' tale.

I would have made several changes to the kit had I not been constrained to FSM's out-of-the-box review guidelines. First, I would drill out all of the camera pack windows before painting and replace them with Microscale Kristal-Kleer. I would also vacuum-form a new canopy to replace the flawed one mentioned above.

This is a good kit, but not the best Heller aircraft model I have built. I spent 16 hours working on it — two or three hours more than usual for a 1/72 scale jet — and it demands at least a couple of years' modeling experience. I would recommend this kit because of the unusual subject, but with the warning that the kit definitely does not build itself.

Dennis Moore



EVERYTHING FROM THE GROUND UP

... should compliment the hours of effort it took to make your fighting vehicles "just so"! Walthers GNARLED OAKS and INSTANT HORIZONS Background Scenes help you create realistic dioramas. You can almost smell the gunsmoke!

These Gnarled Oak Kits are derived from natural tree forms.

You add the foliage... as much or as little as you like. The full color printed background scenes add the illusion of hundreds of square miles of scenery (this diorama is only 11" deep).

Ask your favorite Shop to order these scenic details for your fighting vehicles, be they 1/87, 1/72, 1/35 ...

933-989 Gnarled Oaks 3 Small (5")	\$8.25
933-988 Gnarled Oaks 2 Medium Trees (7")	\$8.25
933-987 Gnarled Oaks 1 Large Tree (8")	\$8.25
949-708 Country to Desert Background		
24" x 36"	\$7.95

(send SSAE for a list of 17 different scenes)

See hundreds of accessories, suitable for 1/87 military scenes, in the Walthers HO Railroad Catalog. 913-626. \$10.95

WALTHERS

Department M2
5601 W. Florist Ave.
Milwaukee, WI 53218



© 1982 Wm. K. Walthers, Inc.

FineScale MODELER

WINTER 1982 / \$2.25



RESEARCH DATA:
Color schemes for a Battle of Britain Supermarine
Spitfire Mk. IA . . . from manufacturer to museum

**The gift
that will be
enjoyed—
and remembered—
all year!**

A subscription to FINESCALE MODELER is a gift that will be enjoyed and remembered all year! Four times a year, FSM provides the information modelbuilders need to improve their skills and increase their hobby enjoyment. FSM is the quality magazine for scale modelers—the magazine filled with how-to-do-it modeling instructions, accurate scale drawings, colorful renderings, crisp photos, and new product information!

If someone close to you is wondering what to give you this Christmas, ask for FSM! If you're searching for a gift to give a fellow modeler, choose FSM! Or after Christmas, use your extra holiday cash for a subscription!

Complete the order blanks below to subscribe for eight issues. Purchase more than one subscription gift subscriptions, we'll send an attractive card bearing your name and announcing the length of the subscription. Make FSM your choice—today!

SUBSCRIBE!

DEPT. 3342, FINESCALE MODELER, 1027 N. Seventh St., Milwaukee, WI 53233

YOUR FIRST SUBSCRIPTION

The first 8-issue subscription (for yourself or as a gift) costs \$15 (outside the U. S., \$19), entitling you to give other subscriptions at a discount.

Enter a new renewal 8-issue subscription beginning with the _____ issue.

NAME _____

STREET _____

CITY _____

STATE, ZIP _____

YOUR ADDITIONAL SUBSCRIPTIONS

The gift subscriptions you give cost only \$12.95 (outside the U. S., \$16.95) for 8 issues after buying the first subscription at the regular price. Enter a new renewal 8-issue gift subscription starting with the _____ issue for:

NAME _____

STREET _____

CITY, STATE, ZIP _____

Enter a new renewal 8-issue gift subscription starting with the _____ issue for:

NAME _____

STREET _____

CITY, STATE, ZIP _____

HOW TO PAY

\$15 (OUTSIDE THE
U. S., \$19)

First 8-issue subscription
Additional gift subscriptions at
\$12.95 (outside the U. S., \$16.95) each

Gift card should be signed from:
(Please print and include full address.) TOTAL _____

NAME _____

STREET _____

CITY, STATE, ZIP _____

CHARGE TO: MASTERCARD VISA EXP. DATE _____

CARD NUMBER _____

SIGNATURE _____

FINESCALE MODELER staff photos
by A. L. Schmidt



Dusting kit

A weathering kit consisting of one bag each of beige, light gray, orange-brown, yellow-brown, and black soil ground to the consistency of talcum powder is available for \$8.95 from The Rock Quarry, 3008 Emerald Drive, Mesquite, TX 75150. The kit includes instructions on how to use the powders with Floquil stains and Dio-sol to weather wood, but the materials are suitable for weathering other types of models and dioramas as well.



Small-diameter solder

W&R Enterprises, P. O. Box 2235, Alhambra, CA 91803, sells small-diameter solder in 3-foot lengths. These can be used to simulate pipes, hoses, or wires. The following sizes are available:

- X-1000. .008" dia., 60% tin-40% lead, melting point 370° F., \$3.50.
- X-1001. .020", 60% tin-40% lead, 370° F., \$3.00.
- X-1002. .025", 5% tin-93% lead-1.5% silver, 565° F., \$3.50.
- X-1003. .025", 50% tin-33% lead-17% cadmium, 293° F., \$3.00.
- X-1004. .031", 95% tin-5% antimony, 450° F., \$3.00.
- X-1005. .032", 95% cadmium-5% silver, 640° F., \$3.50. Add \$.75 per order for postage.



Scale nuts and washers

Grandt Line Products, Inc., 1040B Shary Court, Concord, CA 94518, manufactures black plastic nut and washer sets that are cored to fit over .020" wire. The washers are 6½" in diameter in 1/87 scale, and are useful as smaller fasteners in larger scales. The stock number is 5156; the price is \$1.25 per package.



Special-purpose adhesives

Pacer Technology & Resources, 1600 Dell Avenue, Campbell, CA 95008, has introduced Plasti-Zap/CA++, a cyanoacrylate cement specially formulated for plastic kit assembly. Pacer claims that Plasti-Zap bonds both unpainted and painted plastic surfaces, is not affected by mold-release agents, and allows sufficient time to align parts. A ½-ounce bottle sells for \$2.98.

Zip-Kicker is an accelerator which may be sprayed or swabbed over surfaces to be bonded either before or after Plasti-Zap or another cyanoacrylate cement has been applied. Zip-Kicker is said to promote instant bonding and fillet forming even on large sections of plastic. It will not attack plastic but may dissolve some decals. A two-ounce bottle with a pump sprayer is \$4.98.

Z-7 Debonder is a water-based solvent for cyanoacrylate cements that can be used to remove cured adhesive

from skin (not eyes), furniture, clothing, and plastic parts. It does not attack most plastics, but does slowly dissolve hobby paints and wood stains, so may be used to highlight or weather painted surfaces. A one-ounce bottle costs \$3.25.

Pacer also offers Zap/CA (thin, instant setting), Zap-a-Gap/CA (thick, slower setting), and Slo-Zap (extra-thick, extra-slow setting) [not shown] cyanoacrylate cements. Zap/CA and Zap-a-Gap/CA are available in four sizes: 2 ounce, \$9.25; 1 ounce, \$4.79; ½ ounce, \$2.79; and ¼ ounce, \$1.89. Slo-Zap/CA is sold in one-ounce containers for \$5.49.

The photo shows the cement bottles fitted with the Z-Ends dispensing tips provided with each container; packages of ten tips are available for \$1.49. Pacer claims the tips are specially treated to prevent clogging.



Oxygen hose

Aircraft oxygen hoses in 1/24, 1/32, and 1/48 scales (1/32 scale shown) are available from Waldron Model Products, 1358 Stephen Way, San Jose, CA 95129, for \$2.50 each plus 15 percent for postage and handling. Instructions for modeling an oxygen regulator are included.

Union and Confederate soldiers

Imrie/Risley Miniatures, Inc., P. O. Box 89, Burnt Hills, NY 12027 has released two sets of 54 mm (1/32 scale) cast-metal figures of the Civil War period. One set of four figures represents Union soldiers in foreign uniforms about 1861. They are (photo A, left to right):

- Kit C-86, 83rd Pennsylvania Volunteer Infantry Regiment, 1861-62.
- Kit C-87, 39th New York (Garibaldi Guards) Volunteer Infantry Regiment, 1861-62.
- Kit C-88, 69th (Fighting Irish) New York State Militia, 1861.
- Kit C-89, 79th (Cameron Highlanders) New York State Militia, 1861.

The second set represents Confederate soldiers in dress uniforms. They are (photo B, left to right):

- Kit C-90, a rifleman of the Alexandria Rifles, 6th Battalion Virginia Volunteers, 1860.
- Kit C-91, a rifleman of the Republic

A

can Blues, 1st Regiment, Georgia Volunteers, 1860.

- Kit C-92, a cavalryman of the 1st Virginia Cavalry Regiment, C. S. A., 1861-62.
- Kit C-93, a ranger of Terry's Texas Rangers (8th Texas Cavalry), C. S. A., 1861-64.

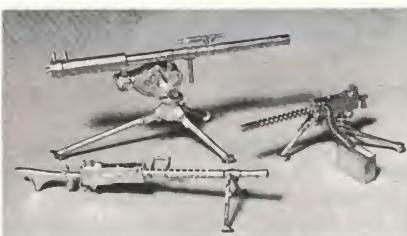
Each kit comes with painting instructions, a color reference card, and a brief history; each sells for \$5.95.

**B**

Brass investment castings

Cal-Scale, P. O. Box 475, Pinedale, CA 93650, has expanded its line of Combat Series 1/32 scale brass castings to include:

- CS-19, pioneer tank tools with brackets, \$4.95.
- CS-20, pioneer tools, \$4.95.
- CS-21, tank tools with brackets, \$4.75.
- CS-22, tank tools, \$4.75.
- CS-23, .30 caliber M1918A2 Browning automatic rifle, \$2.95.
- CS-24, 57 mm M-18 recoilless rifle, \$4.95.
- CS-25, .30 caliber M1919A6 air-cooled machine gun with stock and bipod, \$5.95.
- CS-26, two .50 caliber ammo boxes (lids closed), \$2.95.



- CS-27, three .30 caliber ammo boxes (two boxes with lids closed, one box with lid open), \$3.95.

Also available are kit No. 101, a .30 caliber air-cooled machine gun with tripod and ammo box, \$9.95; and kit No. 103, a 57 mm recoilless rifle with tripod, \$16.95.

Overall 16" x 20"

Full Color Prints

— \$30.00 Each —

IL Residents Add 5% Sales Tax

Send Check Or Money Order To:

HUGH'S AVIATION PRINTS

3540 W. Beach Ave., Chicago, IL 60651

(312) 772-7683

Illustrations by

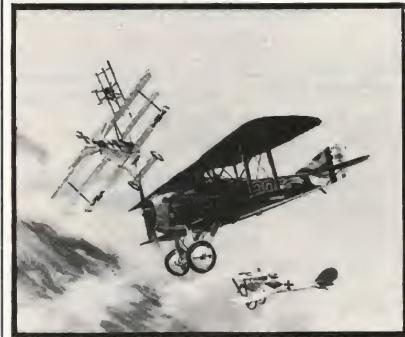
Hugh Polder



"Memphis Belle"



"Flying Circus"



"Adversaries"



"Heading Home"

IN OHIO...

...Adult modelers
shop with us.

ARMOR • AIRCRAFT
DECALS • BOOKS
TOOLS • MINIATURES
FOREIGN MAGAZINES



STRETE HOBBIES



3655 Sullivant St., Columbus, OH 43228



Complete Line of Squadron and Aero Publishers Books plus a Total Selection of Plastics including: Aircraft, Boats, Armour and Large Tamiya Tanks

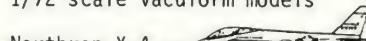
TAMIYA	MINICRAFT
All 10.98 kits 8.50	All 9.00 kits 7.00
9.98 kits 7.50	6.00 kits 4.00
3.98 kits 2.85	5.00 kits 3.75
	4.00 kits 3.00
TESTOR ARMOUR	PAINTS
All 9.50 kits 7.25	Polly-S flats 75c
9.00 kits 7.00	Testors
6.00 kits 4.75	Model Master 99c

Open Daily 9 - 6, Thursday 9 - 9

371 Greenwich ave.
Greenwich, CT. 06830
Telephone (203) 629-9572

HOBBY SHOP'S INQUIRIES INVITED

Now available four R.V.F.
1/72 scale vacuform models



Bell X-5

Bristol T.188 &

Saunders Roe SR A.1

also injection molded kits...

Lockheed P2V-7 Neptune w/skies

Boeing SST

Martin P6M-1 Seamaster

Bell X-5

Douglas DC-8-61 United

Douglas DC-8-32 Viasa

Boeing IM-99 BOMARC missile

Martin PBM-5 Mariner

A-4Q SKYHAWK Argentine Navy

T-28A Mexican A.F.

T-28B U.S.A.F.

OS2U-3 Kingfisher U.S. Navy

Hu-16B Albatross U.S. Navy

Imported from Mexico and Brazil
Modelers Send S.A.S.E. for catalog



R.V.F. HOBBY IMPORTS
P.O. Box 107
BURBANK, CA. 91503



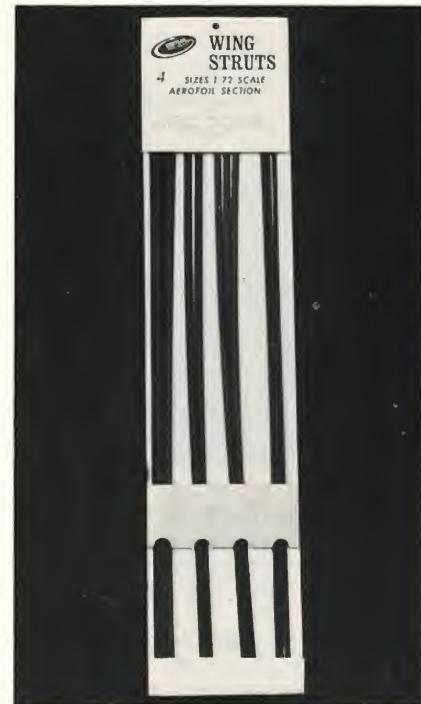
WWI German camouflage decals

Americals, 4373 Varsity Lane, Houston, TX 77004, manufactures 1/72 scale hand-printed, 8 1/4" x 10 3/4" decals for camouflage patterns used on WWI German airplanes and airships. Each sheet costs \$5.00, plus \$.50 postage and handling for three sheets.

The sets are:

- No. 1, Kriegsmarine camouflage, 1917-18.
- No. 2, Nachtbombengeschwader camouflage, 1916-18 (I).
- No. 3, Nachtbombengeschwader camouflage, 1917-18 (II).
- No. 4, Nachtbombengeschwader camouflage, 1917-18 (III).
- No. 5, Five-color lozenge camouflage, 1917-18 (top).
- No. 6, Five-color lozenge camouflage, 1917-18 (bottom).

An instruction sheet explaining the history of the camouflage pattern accompanies each sheet.



Wing struts

Dabar Depot, 13407 Wales Creek Road, South Wales, NY 14139, imports 1/72 scale strut stock made by Sutcliffe Productions of England. Each package contains ten 12" pieces of dark gray styrene ranging in width from about 1/16" to 1/4". The price is \$2.50 plus \$.50 postage and handling.



Woodburning tool

A small, lightweight woodburning tool suitable for plastic sculpting and cutting and accessories manufactured by Hot Tools Inc., Marblehead, Mass., are available from Santos Miniatures, P. O. Box 4062, Lakewood Drive, Harrisburg, PA 17111. Included are:

• WB-1 Hot Tool with a standard wedge-shaped tip, \$15.95. The Hot Tool is UL listed and draws 20 watts at 120 volts. It features a wooden handle and comes with a 5' 6" cord and a two-prong 120-volt AC plug.

• WB-2 Dial-Temp, an adjustable temperature regulator with a three-prong 120-volt AC plug, \$27.50.

• ST-1 wire stand, \$3.50.

• Standard tip, \$2.65.

• Blank tip (which can be ground to any shape), \$2.65.

• Extra-long blank tip, \$2.65.

• No. 8-X needle tip, \$2.65.

• 1/16" circle tip, \$2.65.

• 1/8" circle tip, \$2.65.

• 3/16" circle tip, \$2.65.

• 1/16" round tip, \$2.65.

• 1/8" round tip, \$2.65.

• 3/16" round tip, \$2.65.

**FROM THE EDITOR**

The romance of research

THERE'S A SIREN SONG that lures every one of us away from the work-bench from time to time, often for fairly long periods. It's an activity as related to modeling as brother to brother, and it contributes as much to fine modeling as any new modeling material, paint, or technique. Although it can take many forms, is immensely pleasurable, and can be quite complex, the activity is called, simply, "research."

Why so? Why, if building models is really what this hobby is all about, do so many of us spend so much time with book in lap instead of modeling knife in hand? I think I know the answer, and it isn't something noble or heroic like "the unending human quest for knowledge." No, the reason that research is as much a part of modeling as cutting, gluing, or painting is that learning about the subject of a model makes building it more enjoyable, and, in many cases, more challenging.

Research doesn't just mean counting rivets and checking wingspans. Knowing who flew the aircraft or drove the car, where the tank fought, or what fleet the ship served with adds a dimension to modeling that few non-modelers can appreciate. Thoroughly researching a modeling subject can even establish a special relationship between it and the modeler.

This issue includes an excellent case in point. As Ken Sommerfield dug deeper and deeper into the background of the Spitfire that hangs, puppet-like, from the ceiling of Chicago's Museum of Science and Industry, he developed a kinship for the plane. Ken's curiosity extended far beyond wondering about the Spitfire's missing unit markings, or why it carried fishtail exhaust manifolds; he wanted to know the stories behind the five kill markings, who flew the plane, and how it had come to be in the museum at all. As his research uncovered the answers to those questions the plane slowly assumed the role of an old friend, one Ken isn't likely to forget. His article begins on page 52.

I hope Ken's story will intrigue you as much as it did me, and I hope at least some of you will find his data useful for building your own model of Spitfire P9306. Research is, after all, a most important tool in our arsenal of modeling techniques.



Editor

NEXT ISSUE

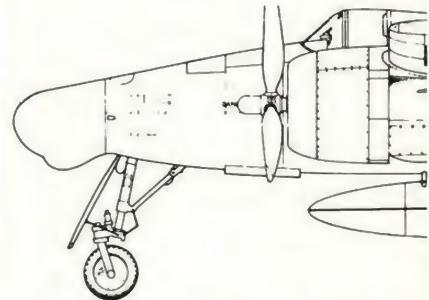
FEATURES



B-29 Superfortress in 1/72 scale. Phil Hays photo.

In Spring FINESCALE MODELER, the B-29 Superfortress "Eddie Allen" is the subject of an extraordinary 1/72 scale model. Phil Hays describes his techniques for removing rivets and other raised details, re-scribing panel lines, and achieving a realistic natural-metal finish. Bob Letterman's lifelike 4 x 8 foot 1/35 scale diorama, titled "The Winds of War," portrays a German town on the eve of World War Two. It's a highly unusual—and challenging—modeling project, and FINESCALE MODELER's interview with Bob offers highly interesting reading.

DATA/DRAWINGS



Grumman F7F-3N Tigercat. Drawings by W. Koster.

FSM will feature scale drawings and detail photos of Grumman's F7F-3N Tigercat, plus particulars on building four different versions of the aircraft from Aoshima and Monogram 1/72 scale kits.

ALL IN SPRING FSM!

Modeling the Soviet T-60 scout tank in 1/35 scale

An ideal vehicle for your first scratchbuilding project



Author's collection

BY STEVE ZALOGA

SCRATCHBUILDING armor models isn't difficult; in fact, if you've used sheet plastic to make parts for conversion projects, you're already familiar with most of the techniques you'll need. In response to my article on the M1 Abrams in the Spring 1982 FSM several readers asked for a simpler, 1/35 scale project with full-size templates for the parts. After considering possible candidates such as the British Cromwell Mk. VI light tank and the Belgian T.15, I settled on the diminutive Soviet T-60.

The T-60 scout tank served in Soviet tank brigades in 1942 and 1943. Lightly armed and armored, it carried a two-man crew. There were two main production batches of the T-60, the early type with spoked wheels that I modeled, and a later version with solid disc wheels and thicker turret armor. Either makes an interesting counterpart for a model of the contemporary T-34, if only for the noticeable disparity in size.

Finding appropriate kit parts. Before starting any scratchbuilding proj-

ect, look around for kit parts you can use, especially suspension parts. For this model I tried to find kit parts for the wheels and track which would fit the vehicle without requiring major modifications. Road wheels from either the Tamiya British Universal Carrier Mk. II (kit No. MM-189) or the Italeri PzKpfw IB (kit No. 804) could be used, though I strongly prefer those from the

Universal Carrier. The T-60 requires 10 road wheels, while the Tamiya Universal Carrier kit contains only 9. If you have a second kit handy, the spare road wheel can be taken without totally spoiling the second kit.

The drive sprocket from the Universal Carrier is also readily adaptable to the T-60 even if some of the details are not quite right. For the small return



Figs. 1 and 2. (Left) The first stage of the turret subassembly consists of the octagonal base and four inner formers. (Right) The same subassembly after adding the keyhole-shaped turret roof and three of the slanted turret side panels.



(Above and below) Author Zaloga's T-60 is a tiny armor model even in 1/35 scale; it's just over 2" tall and only 4 1/2" long. It represents a tank of the 61st Light Tank Brigade in 1942-43.



rollers I used road wheels from the Fujimi Sherman, but many other kit wheels or rollers would be just as appropriate. The tracks are from the Italeri PzKpfw IB kit mentioned above.

Aside from kit parts, you will need tools, liquid cement, and an ample supply of sheet plastic. Unless otherwise noted, the parts on my model were cut from .020" sheet styrene. Don't try to substitute tube-type plastic cement for the liquid, even if you use tube cement for kits. In order to allow decent cleanup of gaps and edges, sheet plastic must be assembled with liquid cement.

Starting with the turret. The turret on this model is undoubtedly the most difficult subassembly to build, and if you can handle this, the rest of the project should be a breeze. By the way, the Germans used a few captured T-60s as artillery tractors, minus the turret. If you have trouble with the turret, consider building the hull and running gear to make an attractive and unique towing vehicle for an Italeri or Tamiya 75 mm Pak 40 or similar weapon.

Start by transferring the full-size template shapes (page 26) to plastic. Use a

pin to poke tiny dots through the paper and into the plastic at the corners of each piece. Then, using a metal ruler and a razor blade, connect the dots and cut the pieces out.

I prefer to cut the pieces completely free from the plastic sheet rather than simply scoring the plastic and breaking the pieces free as many modelers do. Cutting all the way through results in cleaner edges. Incidentally, throughout this article the numbers in parentheses refer to the part numbers on the template on page 26.

Begin the turret by assembling the base (1), the internal formers (3, 4, 5), and the turret roof (2). The dotted lines on the turret base show where the internal formers go. If you like, add another part (3) to the assembly as I did to strengthen the internal formers, Fig. 1.

The next step is to add the turret side and back panels (6, 7, 8), Fig. 2. Bevel the edge of the pieces where they come into contact with one another at any angle other than 90 degrees. This can be done with a fine file or by scraping with the edge of a sharp modeling knife. The edges that are critical in this re-



Fig. 4. The basic, boxlike hull assembly. All parts are cut from .020" styrene sheet. Note the use of bracing strips in the interior corners to align and reinforce the joints.

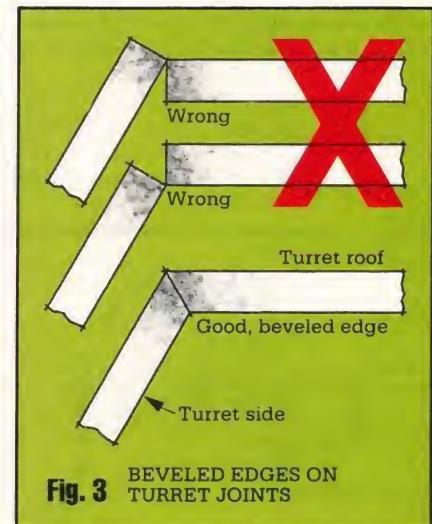


Fig. 3 BEVELED EDGES ON TURRET JOINTS

spect are those that contact the turret roof edge, Fig. 3. Don't bother to bevel the edges that meet the turret base; they are completely hidden on the finished model.

Next add part (9) to the front edge of

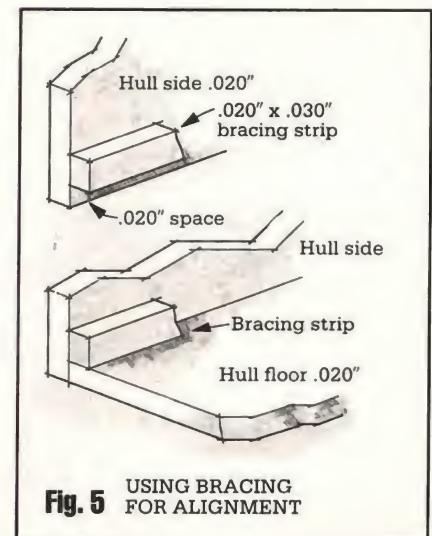


Fig. 5 USING BRACING FOR ALIGNMENT

the turret roof, part (13) just below (9) to cover the upper gap of the gun mount, and part (12) immediately below (13).

The trickiest part of building the turret is attaching the last four turret walls (14, 15, 16, 17). You may find that the shapes provided on the templates will not fit your model exactly because of slight variations in cutting or assembling the earlier parts. If your precut parts don't fit properly, mark them up to show where revision is required and cut new pieces. If you're tempted to use the poorly fitting parts and try to fill in the gaps with putty or shims later, don't. To achieve tight, good-looking joints it's always best to cut new parts that will fit properly.

When adding the turret walls you will have to bevel both the side and top edges to ensure the best possible fit with the existing structure. Once the walls are in place, add part (11) across the gap between the lower portions of parts (14 and 15).

This completes the basic turret assembly. To fill small gaps I use liquid cement with plastic scraps dissolved in it. This mixture is tougher than putty

and also clings better. If you choose to try this homemade filler experiment with it on some scrap plastic before using it on the turret; if there is too much liquid cement in the mixture it can make a mess of weak joints.

Now assemble the gun mantlet (18, five parts). I left the two side parts slightly recessed as on the actual tank. To attach the turret to the hull, I cut a turret "ring" (36, actually a disc) from .040" plastic. This is the same diameter as the circular hole in the hull roof (26) and allows me to rotate the turret for photos. Alternate mounting methods include a simple peg-and-hole arrangement, or simply gluing the turret directly to the hull.

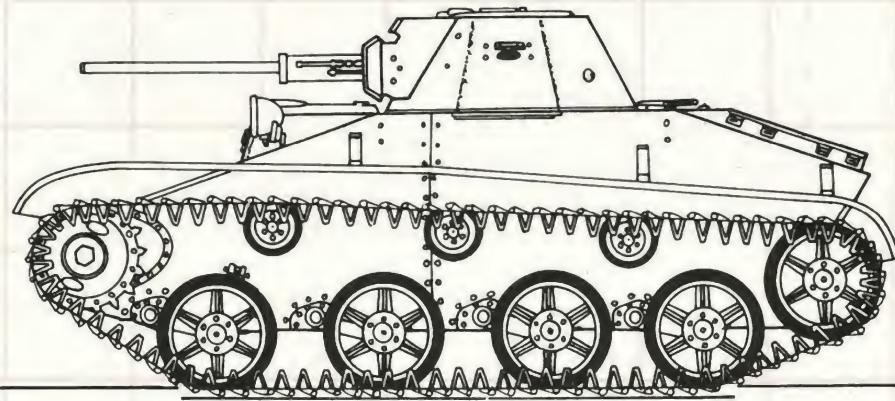
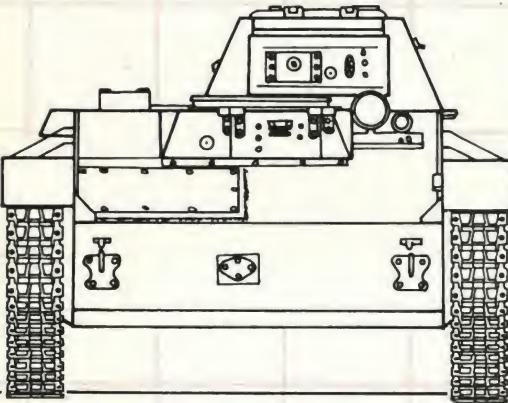
Building the hull. The T-60 hull is quite simple as tank hulls go. The only tricky part is the open grille over the engine radiator on the rear deck. On my model I added a fully detailed grille assembly as shown in the photos, but frankly, after covering the opening with screening, you can't see any of it. I would recommend cutting the rear plate (25) to fit all the way across the hull (the full size, including the dotted lines),

and painting the area below the screening with flat black paint. As well as being simpler, this method results in a stronger hull assembly.

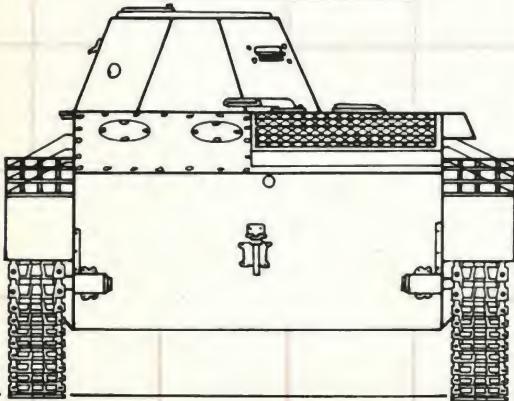
To start the hull, cut out the parts (19 through 24). Do not cut out the

SOVIET T-60 MODEL 1941 TANK

Length:	14'-1"
Width:	8'-1"
Height:	6'-2"
Weight:	5.8 tons
Crew:	2
Engine:	GAZ-202, six-cylinder, water-cooled gasoline engine, 70 hp at 3,400 rpm
Armament:	One 20 mm TNSL cannon One 7.62 mm DT machine gun
Armor thickness:	7-20 mm
Road speed:	28 mph
Operating range:	380 miles
Builders:	Zarod Nr. 1 Gorki Automobile Factory (GAZ); Zarod Nr. 38 Kolomenskiy Locomotive Works
Ground pressure:	6.55 lbs per square inch
Number produced:	6,022
Service dates:	1941-1943
Variants:	T-60 Model 1942 with solid road wheels, thicker armor, and improved GAZ-203 engine

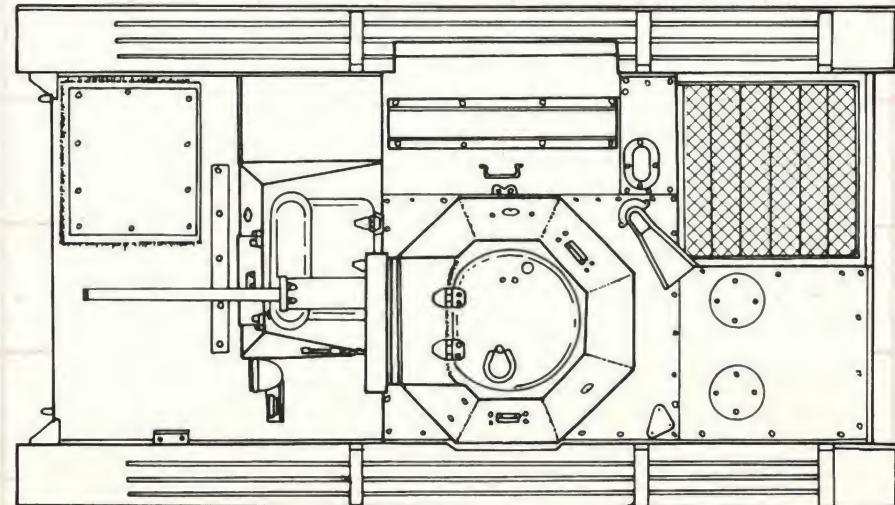


PREPARED FOR
FINESCALE MODELER
BY
Steve Zaloga



SCALE IN FEET
0 1 2 3 4 5 6

1/35 SCALE





Four photos, James Cochran

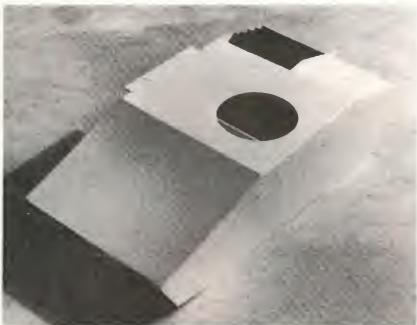


Fig. 6. The basic hull assembly after adding the glacis, roof, rear panels, and grille (the black portion).

small circles on the side panels (20, 21); these indicate positions where the torsion-bar road wheel arms and return rollers are to be attached. Cut out an extra part (24) to serve as an internal bulkhead to strengthen the assembly, Fig. 4.

Line the inside of the hull sides with .020" or .030" bracing strips located .020" from the edge of the parts, Fig. 5. These strips form ledges to which the other parts will be joined, strengthening the joints and helping to align the parts during assembly.

Starting with the floor (19), add the sides (21, 20), the bulkhead (24), rear plate (24), and bow and lower bow (23, 22). I cut out a rectangular opening on part (26) for the air intake to the right

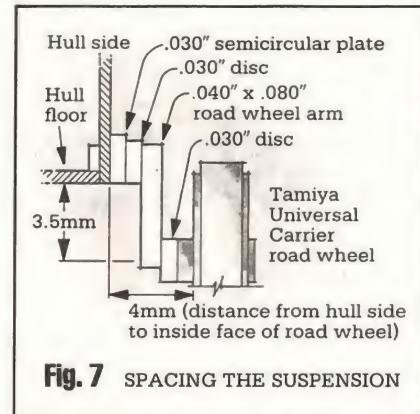


Fig. 7 SPACING THE SUSPENSION

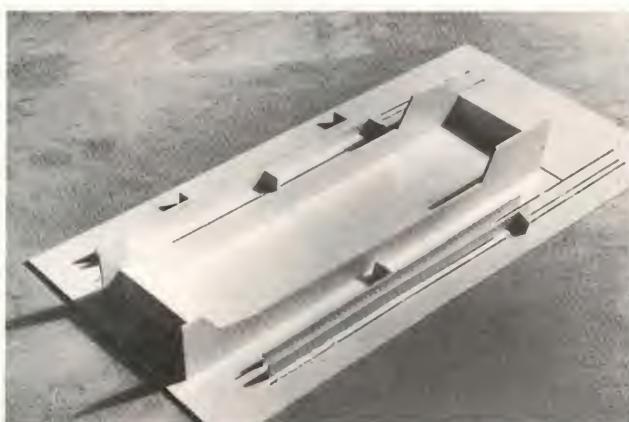
of the turret hole. This is not very noticeable on the finished model, so I have omitted it from the template.

Next add the roof (26), glacis plate (27), and engine deck (25, either long or short as discussed above), Fig. 6. When you attach the long, full-width version of (25) it should not mate with the right hull side (20) all the way at the top, but about 4 mm below the upper edge. The protruding portion of the hull side is the right side of the screened housing and should be the same size as part (28), the corresponding left side of the housing. You will have to bevel a few of the panels in this final assembly such as the joint between the glacis plate and the roof (27 and 26).

The last major assemblies are the



driver's position (31, 30, 32, 33) centered on (27), and the side panels for the engine air intake (29, three pieces) which attach to the side of (20) and the right edge of (26). These complete the basic hull assembly.



Figs. 8 and 9. The author constructed this simple crib-like holding fixture to aid in positioning the suspension parts on the hull.



It helps ensure that the finished model will sit level, and that the tracks will be the correct distance from the hull sides.

Attaching and spacing the suspension parts. One point that I cannot emphasize enough is that the road wheels and other suspension parts must be attached as strongly as possible to each other and to the tank hull. The track puts a lot of tension on these parts, and they will bend or break off unless they are firmly attached to the hull.

When attaching the road wheels to the hull side the critical measurement is the distance from the hull side to the center line of the track. (If you attach the wheels too close to the hull, when you go to add the tracks you are in for a nasty surprise!) The T-60 used torsion-bar suspension, meaning that the road wheels were mounted on trailing arms. Make these (you'll need eight) from

.040" plastic. Each arm is .080" wide by 10 mm long, and Evergreen Scale Models* sells .040" x .080" strip styrene (No. 144-B) which is ideal.

Instead of attaching the road wheel arm directly to the Tamiya Universal Carrier wheel, add a .030"-thick disc between the wheel and the arm as a spacer. A useful tool for making such discs is a leather punch. The punch, which can be found at larger hardware stores, resembles a set of shears but has a rotating, star-shaped head with punches of varying diameters. Discs made with a leather punch are not as

*Evergreen Scale Models, 2685 151st Place, Redmond, WA 98502.

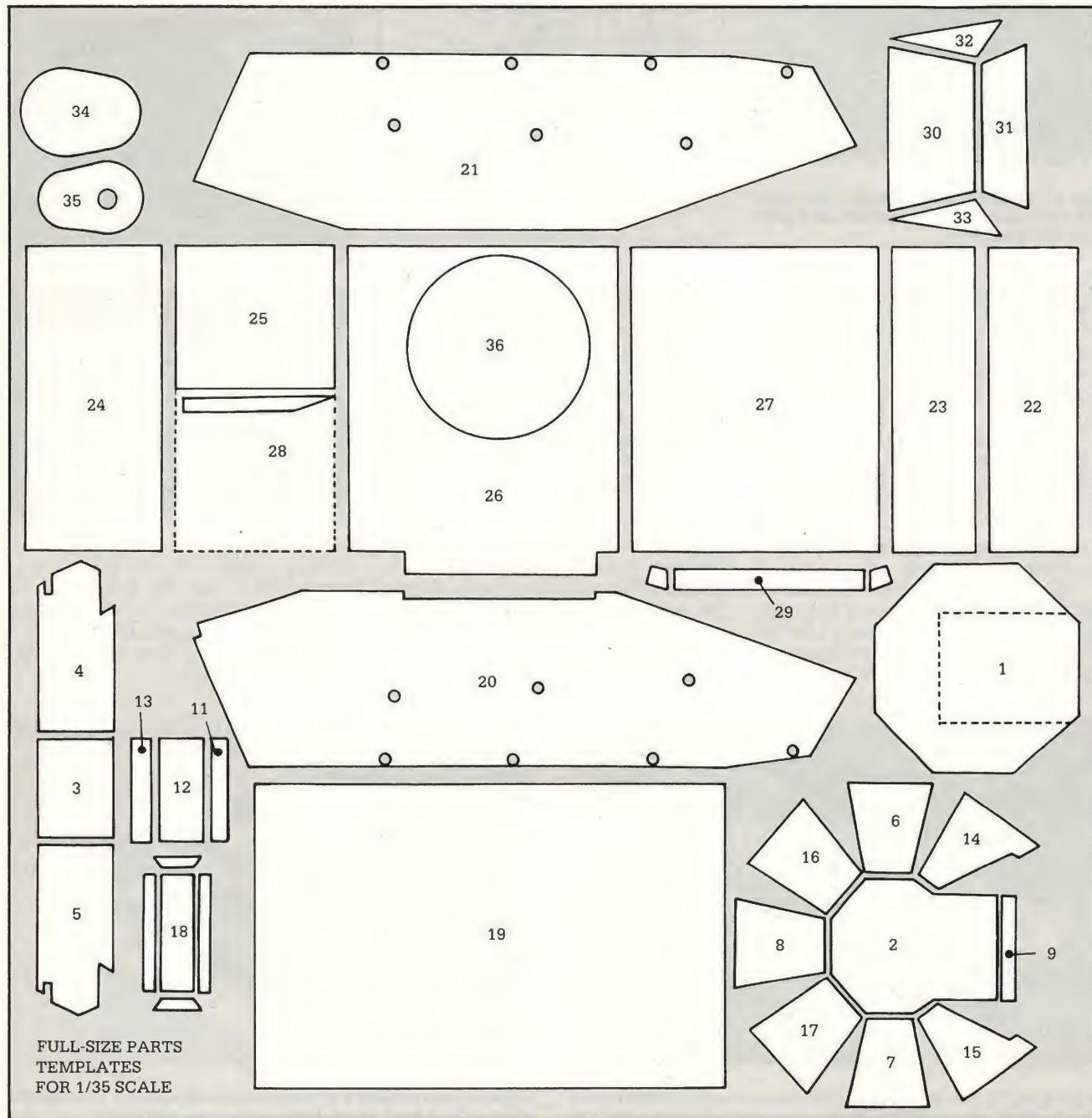
**Waldron Model Products, 1358 Stephen Way, San Jose, CA 95129.

cleanly cut as those made with a Waldron** punch set, but they are acceptable for items like this that will not be seen.

Add a .030"-thick semicircular mounting panel to the side of the hull for each road wheel arm, as well as another .030" disc spacer. All these layers, Fig. 7, should push the road wheels out far enough that the track will sit properly.

To attach the road wheels I construct a temporary "crib" under the model with a false floor on which the wheels rest, Fig. 8. This fixture holds the hull level and ensures that the wheels are aligned properly and remain vertical while being cemented to the hull, Fig. 9.

Make two each of parts (34, .010") and (35, .040"), which form the hous-



ings for the front drive sprockets. The circle on part (35) shows where the drive sprocket from the Tamiya Universal Carrier is to be attached. This assembly protrudes forward of the hull side, and its precise location is shown on the side view of the scale drawings. The rear idler wheels must be attached to heavy brackets mounted on the back of the hull. I made the brackets from the muffler of the Tamiya Universal Carrier kit, part B-19.

Heat-forming the fenders. The fenders on the T-60 are quite straightforward, and I made mine from styrene strips. The only tricky parts are the curved portions fore and aft. Although many modelers simply cold-bend the plastic and hope that the inner edges will hold the shape where they are cemented to the inner fender wall, I prefer to heat-form the fenders to ensure that they won't uncurl later, after the model is complete.

Start by cutting a 9 mm-wide strip of .040" styrene. Next, cold-bend the portions of the fender that will be curved to limber up the plastic and make it a bit more flexible. A good way to do this is to run the plastic over the edge of a wooden table a few times. Find a piece of metal tubing or other metal object which will give the fender the proper degree of curvature. I used a scrap of copper pipe, but a thick modeling knife handle would work, as would many other household items. Wrap the fender strip around the form and clamp it there, Fig. 10.

Now head for the kitchen and start some water boiling. Dunk the plastic, form, and clamp assembly into boiling water for five to ten seconds, then quickly remove it and drop it in a bowl of cold water. After it cools remove the clamp and form; the fender will hold the heat-formed curve permanently. The raised ribs on top of the fenders are .010" x .020" Evergreen styrene strips (No. 100-B).

Welds, rivets, and details. In common with many WWII Soviet tanks, the T-60 had a very crude finish on many parts. Particularly noticeable are the heavy weld beads around the driver's compartment and some of the turret joints. Simulate this by working a thin line of filler putty into the joint, then carefully trim and detail the weld with a hobby knife before the putty dries.

I made individual rivet heads from .040" plastic strip using a punch-and-die technique that I will explain in detail in a future issue of *FSM*. Rivet heads can also be made by slicing up a length of stretched sprue. I intentionally chose the T-60 over several similar vehicles because it does not require extensive rivet work. In fact, even in 1/35 scale it doesn't look all that bad without rivets.

Detailing the suspension was fairly straightforward. I used the Waldron punch set to make the many small discs needed for the torsion bar arms, wheel hubs, and other features. The track is from the Italeri PzKpfw IB, shortened by five shoes and tied together with nylon thread in three locations per track.

There isn't room here to explain all the sundry small detail bits and pieces on the T-60, but once you've gotten this far you can handle the detailing without problems. To make the screening on the rear deck, Fig. 11, I used some nylon drape material with the proper weave, but either the fine brass screen sold in model railroad shops or the very fine nylon screen used in silk screen printing (available at larger craft shops) would serve as well. The main gun, Fig. 12, is simply a length of $\frac{1}{16}$ " K&S aluminum tubing.

The paint scheme. Perhaps the most famous Soviet T-60 unit was the 61st Light Tank Brigade, which fought on the Volkhov Front (near Leningrad) in the winter of 1942-43. The 61st earned

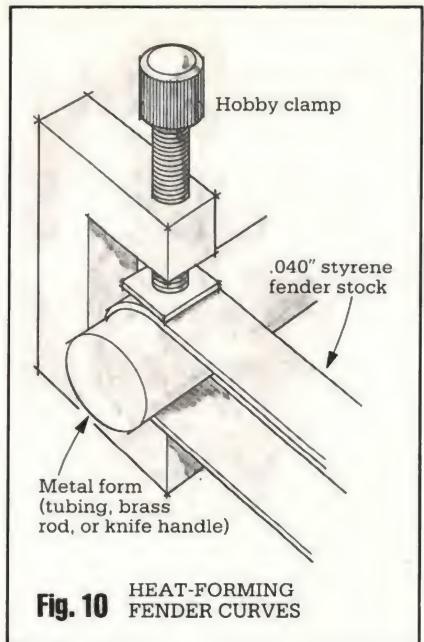


Fig. 10 HEAT-FORMING FENDER CURVES

the grim distinction of being the first Soviet unit to face the new German Tiger I tanks, and was nearly wiped out in several very unequal encounters in the January 1943 counteroffensive in that region. The unit was later reformed on T-34 Model 43s and in 1944 became a Guards heavy tank unit with IS-2s. During the winter of 1942-43 the T-60s of the 61st were finished in the Type B scheme of whitewash over the base dark green, and I chose that color scheme for my model.

Good luck on your T-60!

FSM

REFERENCES

- Chamberlain, P., and Chris Ellis, *Soviet Combat Tanks 1939-45*, Almark, London, 1970.
- *Russian Panzers in Action*, Squadron/Signal Publications, Carrollton, Texas, 1972.



Figs. 11 and 12. (Left) Steve's article doesn't go into a lot of detail on how he made the details, but this view of the completed model before painting provides a good idea of what goes where. There isn't a great deal of detail anyway; the T-60 is a



rather plain vehicle, which is what makes it ideal for a first-time scratchbuilder. (Right) The T-60 after a base coat of dark green paint. The extreme lighting here shows off the excellent weld bead detail, which Steve models with hobby putty.

COMBAT MODELS

1633 Marconi Road
Wall, New Jersey 07719

VACUFORMED MODEL KITS

AIRCRAFT

3 lb	48-053 B-58 Hustler	M	24.95
2 lb	32-089 F2A-3 Buffalo	M	18.95
2 lb	32-090 Curtiss P-6E	M	18.95
2 lb	32-091 Curtiss SBC-3	M	18.95
3 lb	48-001 PBY	D	21.95
3 lb	48-002 Privateer Conv.		13.95
2 lb	32-003 F8F Bearcat	D	15.95
2 lb	32-004 He 162		15.95
2 lb	32-005 Ju 87D&G Conv.	D	10.00
2 lb	32-006 Ta 152 H & C		16.95
3 lb	32-007 SB2C Helldiver	D	19.95
3 lb	32-008 He 219 Owl	D	21.95
3 lb	32-009 Ar 234	D	18.95
3 lb	32-010 Ta 154	D	18.95
3 lb	32-011 AM-1 Mauler	D	18.95
3 lb	32-012 BF 109 F-K-H	D	18.95
2 lb	32-013 P-P39 Airacobra	D	15.95
4 lb	48-014 Sunderland	D	24.95
3 lb	32-015 TBM Avenger	Temp-Dls.	
3 lb	32-016 Me 410	D	18.95
2 lb	32-017 Fw 190D	D	12.95
2 lb	32-018 Go 229 Horton	D	16.95
3 lb	72-019 BV 222	D	18.95
3 lb	32-020 Whirlwind	D	18.95
1 lb	72-021 AC-1 Carobou		10.00
3 lb	32-022 B25	D	18.95
3 lb	32-023 F-105 D-F	M	23.95
2 lb	32-025 P-47 Razorback		12.95
3 lb	32-028 A-7 Corsair II	M	22.95
3 lb	32-029 Rex/George		18.95
3 lb	32-030 F-8 Crusader	M	21.95
3 lb	32-031 FJ-1 Fury	D	18.95
3 lb	32-032 F-101 A,B,C,G/H	M	20.95
3 lb	32-033 F9F Panther		18.95
3 lb	32-036 Do 335 A/B-8	D	20.95
3 lb	32-037 F-100D	M	20.95
3 lb	48-038 He-177	D	19.95
3 lb	48-039 PBM Mariner	D	22.95
1 lb	48-040 Go 229 Horton		10.95
1 lb	48-048 Rata		8.00
1 lb	72-049 Ascender		6.00
1 lb	72-050 X-15C-1 Curtiss		6.00
1 lb	72-051 Me 163A		6.00
2 lb	32-068 Kingfisher	D	16.95
2 lb	48-080 Ar 96		10.00
2 lb	48-081 He 162		10.00
2 lb	48-082 Me 410		13.95
2 lb	48-083 He 126		13.95

SHIPS

3 lb	72-034 Mk VII U-Boat		18.95
4 lb	72-035 U. S. Fleet Sub		24.95

ARMOR

1 lb	35-084 Mercedes Benz G4		6.00
1 lb	35-085 Bussing Nag 4500		12.00
1 lb	35-086 Grosser LKW AnHanger		10.00
1 lb	35-087 Rommel's Mammut		10.00
1 lb	35-088 Leichter Zugkraft 3T/SD KFZ II		10.00
1 lb	D-000 Combat Decals 48/32 four sheets Ger, Brit, American apx 200 parts		10.00
1 lb	DG-001 1/32 German Decals & stencils high quality		7.50

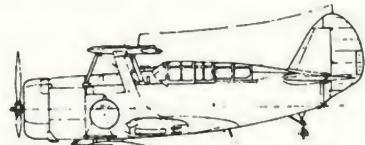
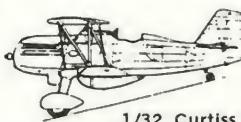
* note: D decals M metal parts

* Metal parts are available for the F-105, A-7, F-8, F101, F-100 \$4.00 per kit + postage .50¢

NEW! NEW! NEW! NEW! NEW! NEW! NEW!

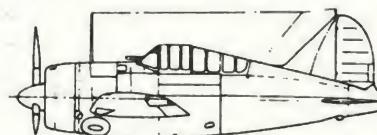
NEW KITS WITH METAL CAST PARTS SUCH AS LANDING GEAR, STRUTS, EXHAUSTS, TAIL WHEELS AND OTHER HARD TO BUILD ITEMS. EACH KIT HAS ITS OWN CUSTOM METAL PARTS. DECALS ARE NOT INCLUDED: WE RECOMMEND THE APPROPRIATE COMBAT DECAL SHEET.

PLEASE ORDER BY ITEM NUMBER



1/32 Curtiss SBC-3/4 18.95

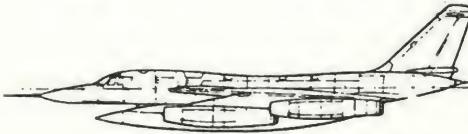
1/32 Curtiss P-6E 18.95



1/48 Lockheed Hudson 19.95

1/32 Ju-88	1/32 F-102	1/32 F-106
1/32 F-102	1/32 Hind-D	1/48 Moonbat
1/32 Hind-D	1/48 Mercator	1/48 Mercator
1/48 Moonbat	1/48 Mercator	1/48 Mercator
1/48 Mercator	1/48 Mercator	1/48 Mercator

COMING SOON



1/48 B-58 Hustler 24.95

NEW! NEW! NEW! NEW! NEW! NEW! NEW!

SIZE: 8 1/2 x 11 DECALS \$4.00 ea

CD 006	1/48 - 1/32	WWII TO PRESENT
CD 007	1/32	BETWEEN THE WARS
CD 008	1/72 - 1/48	BLACK/WHITE ALPH.
CD 009	1/72 - 1/32	BLACK NUMBERS
CD 010	1/72 - 1/32	WHITE NUMBERS
CD 011	1/32	WHITE ALPH.
CD 012	1/32	BLACK ALPH.

NOW YOU HAVE THE DECALS TO MATCH THE MODEL. COMBAT DECALS ARE OF THE FINEST QUALITY AND GIVE EXCELLENT RESULTS WHEN USING THE MICRO SYSTEM.

SPECIAL OFFER: BUY ALL 7 NEW SHEETS, WE THROW ONE IN FREE, \$24.00 ENOUGH MARKINGS TO LAST A LIFETIME!

DEALERS INQUIRIES INVITED FOR DECALS

SHIPPING INSTRUCTIONS

U. S. Orders to continental states shipped UPS. New rates: orders to \$20.00 add \$2.00, \$20.00 to \$50.00 add \$3.50, \$50.00 up add \$4.00. CANADA: Shipped Parcel Post add \$3.10 first 2 lbs, \$1.00 each additional 1 lb. U. S. Funds only. Plus \$1.00 special packing & handling. Insurance for Parcel Post: Add \$1.00 for each \$50.00 ordered. APO & FPO write for postage rate. Note: All checks must clear our bank. Allow 4 weeks delivery. Money orders shipped in one week. N. J. residents add 5% sales tax. All prices subject to change without notice. All sales are final. Vacuformed kits are for the mature modeller. We suggest the inexperienced begin with a simple kit to start off, eg. Go229. Or write to IPMS, P. O. box 480, Denver CO. 80201, for information on the plastic hobby club branch nearest your area.

NEW 1983 CATALOG DUE JANUARY \$3.50

Modeling a mountain man in the 20th century

Step-by-step techniques for painting and adding realistic buckskin texture to a 90 mm figure

BY BILL TILTON
ARTWORK BY THE AUTHOR

THE HISTORY behind the figures I model is a large part of the fascination of the hobby for me, and recently I became interested in the exploits of the mountain men. After extensive reading on the subject, my plan was either to scratchbuild a mountain man, perhaps Jedediah Smith or famed frontier opener Jim Bridger, or to convert one from Historex figure parts. But, as luck would have it, just as I prepared to work on my 54 mm figure, Series 77 Miniatures* released the first of their mountain men, figure A/16, "Jerry C. Crandall, Mountain Man of 1830."

When I opened the kit box, thoughts

of the 1836 rendezvous, the famous Green Mountain knives, and all the flavor of that lusty, rough-and-tumble time in frontier history came vividly to life for me. Pat Bird, the sculptor, did a marvelous job, and I took his excellence as a challenge: My goal in painting the figure was to make it come alive with colors and textures — from beads, to buckskins, to flesh tanned by wind and sun. Here's how.

Assembling the figure. As with any kind of kit, start by examining each of the 16 parts. Check that nothing is missing, and set aside small parts such as the powder horn and pouch ties so they won't be lost. Dry-fit the parts, and if necessary remove flash and mold lines. A small set of tool and die maker's rifflers** is ideal for this cleanup work. Rifflers aren't cheap — the 6" ones

I use cost about \$60.00 for a set of 12 — but they are the kind of professional tool that makes a hobby vastly more enjoyable.

Different modelers always have different opinions on whether figure parts should be painted separately and then assembled, or the whole figure assembled first, then painted. On the mountain man, contrary to the instructions, I glued all the large parts except the head together first, holding aside small items such as the powder horn, separate powder measure, retaining strap, pouch ties, and knife scabbard. I painted the head separately and added it to the figure quite late in the project. I also added a few last paint touches to the rifle after gluing it to the figure.

After filing down the mating surfaces of the parts, I used Hot Stuff II to make temporary joints so I could file down the areas where parts meet. For joining small parts, Hot Stuff or similar "super glue" is excellent, but for arm-size parts or larger I prefer 5-minute epoxy, such as Weldwood. I mix the epoxy on a plastic coffee-can lid according to its directions, then align and hold

*Series 77 Miniatures, 7861 Alabama Ave. No. 14, Canoga Park, CA 91304.

**One source is the Brookstone Company, 127 Vose Farm Rd., Peterborough, NH 03458.



Figs. 1 and 2. Author Tilton used the Series 77 Mountain Man figure virtually unchanged. (Top) He simulated the shaggy texture on the mountain man's buckskins with thick casein paint, using a poke-and-pull technique. On the base (above), he covered the cast-in detail with realistic texture made from wood shavings, natural materials, and static grass.

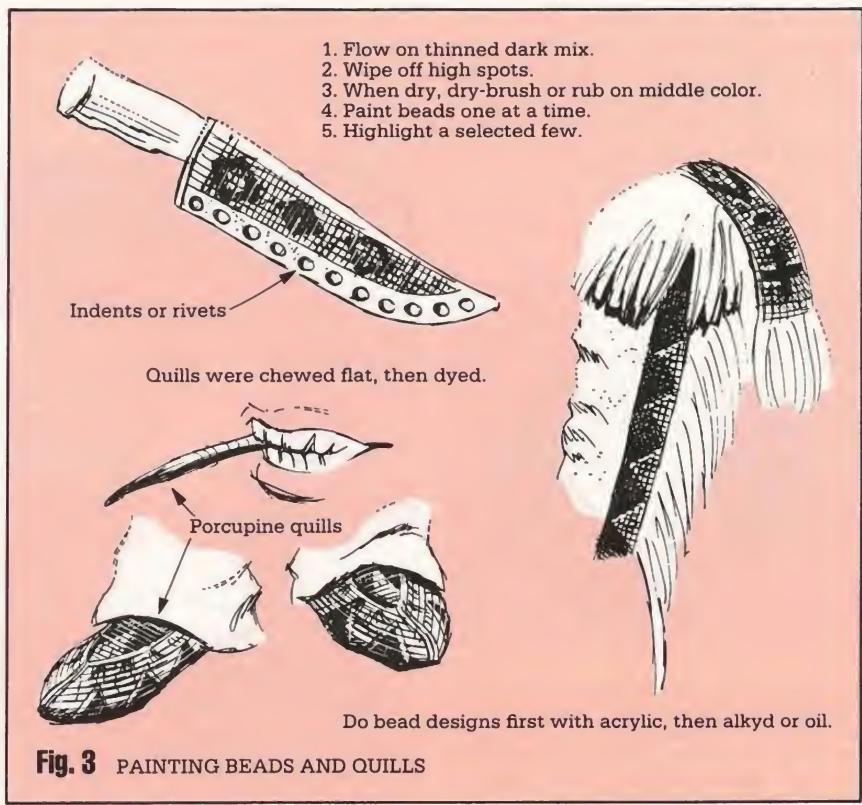
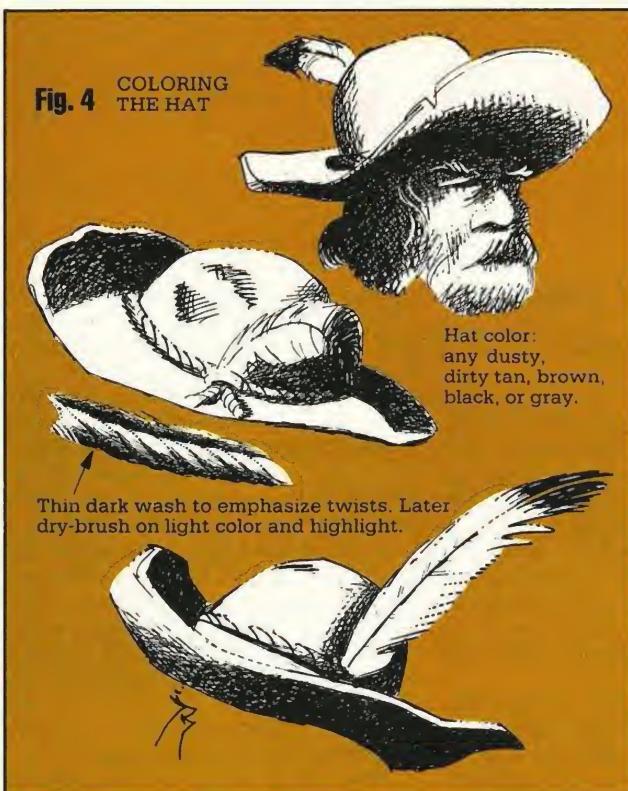


Fig. 4 COLORING THE HAT



1. Choose the best light direction, then emphasize resultant lights and shadows.
2. Select an eye direction. Study paintings, photos, and people. Most eyes are overpainted!
3. Look for reflected highlights.

Note: Minimize detail in light areas and emphasize it in shadow areas.

Fig. 5 LIGHT AND SHADOW ON THE FACE

the figure parts together using a "third hand" soldering fixture.

When the parts to be joined are heavy, the joint should be reinforced. One way is to drill matching holes in both parts so a short wire peg can be inserted. Another method, the one I chose to reinforce the arm holding the rifle, is to drill a series of random holes in each piece so epoxy can flow into them, creating small grippers or claws when dry.

To make it easier to handle, I also epoxied the figure to its cast base. My plan called for an additional two-part wooden base, so I drilled several holes into the upper wooden portion and into the metal base to give the epoxy a better grip. Then I drilled another peg

hole in the center of the upper wood base to secure it, in turn, to the 4" x 4" lower base.

With the figure essentially assembled, I carefully inspected the glued joints. One filler you may not have tried is Hot Stuff. Using the flat end of a toothpick, "shovel" plain baking soda into a gap, then apply Hot Stuff over it. The cyanoacrylate hardens instantly and the joint can then be filed, sanded, and finished.

To finish the joints before priming I

used a flexible-shaft hand grinder, my rifflers, and several $\frac{1}{8}$ "-wide, carbide-grit Mylar strips*. You may be able to talk your dentist out of a few of these strips — their greatest advantage over other abrasives is that they can get into hard-to-reach places.

Priming metal figures seals them and inhibits surface oxidation, and more

*Cuttlefish Polishing Strips and Flint Abrasive Dental Strips are available from the J. Bird Moyer Co., Inc., Dental Manufacturers, 117-121 N. 5th St., Philadelphia, PA 19106.

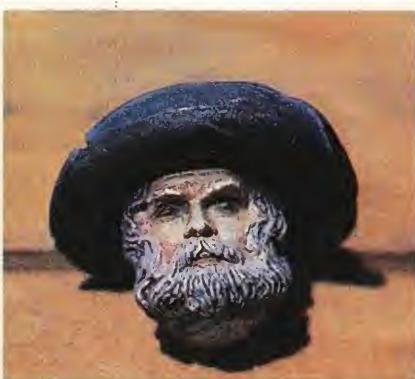


Fig. 6. The head of the figure was painted separately. This extreme close-up is not particularly complimentary, but it shows some of the subtle shading and blending that the author achieves with relatively fast-drying alkyd colors.

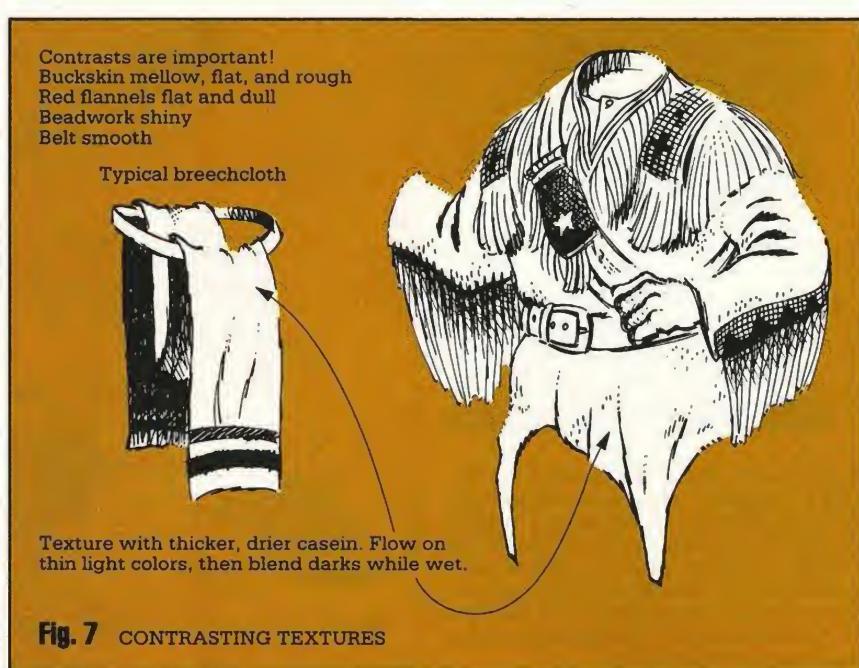


Fig. 7 CONTRASTING TEXTURES



Fig. 8. The subtle shading on the finished figure makes it hard to see, but one important aspect of Bill's technique is pre-shading areas where differing materials meet, as here on the back where the buckskin, beaded border, and fringe textures touch one another.

important, a coat of primer reveals flaws such as missed mold lines, flash, and insufficient work on joints. My favorite primer is Floquil's MA9 Figure Primer, which dries rapidly, is exceptionally thin, and shrinks evenly around detail. After priming, once again examine the figure carefully, filing or filling deficiencies. Then, lightly reprime, continuing the inspection routine until you are satisfied.

Texturing the base. I wanted the figure base to contribute to the overall effect of the figure, so I decided to cover the cast-in detail with more lifelike texture. I started by filling in the figure title and date with epoxy, and when that had dried I applied a thin coat of acrylic gesso, manipulating it with a brush and sponge to add relief.

Next, I dug out my collection of lichen, twigs, pebbles, seeds, thorns, bits of cork, and sawdust to add weedlike texture to the base. One texture material I learned about long ago is wood dowels run through a pencil sharpener; used singly or in clusters, the shavings look just like plant leaves.

Something I hadn't tried before, but wanted to, was the static grass mentioned by Shep Paine in his book, *How To BUILD DIORAMAS*. I liked the olive shade that Shep used, but the only colors in stock at my hobby shop were a harsh dark green and an unrealistic reddish brown. However, at the shop I noted some strange faded spots on the packages that the store owner couldn't explain. Having an idea of what had caused the spots, I bought a sack of each color. At home I spread the contents of both sacks on a large, white enamel paint tray and misted the material with straight Clorox bleach. Several hours later the "grass" was bleached white, and I transferred it to a jar and covered the top with perforated plastic



Fig. 9. This closeup photo shows off the colorful and intricate beadwork and highly effective buckskin texture on this 90 mm mountain man. Note the darker shade of tan used on the breechcloth.

wrap to let the bleach evaporate in the sun.

With all the base materials at hand, I painted a coat of full-strength acrylic matte medium (white glue will do as well) over the base, flowing it up to, but not onto, the moccasins. Using tweezers, I added each bit of large growth blade by blade, followed by pebbles, seeds, and bits of cork. I sprinkled sawdust on a few areas for textural variety and applied static grass to the rest, rolling it off my fingers as one would salt. Then, as recommended in Shep's book, I blew gently against the grass and almost magically the blades stood upright.

With a small hair dryer, I applied heat and the base was soon ready for more treatment. This time I thinned the medium slightly, and then dabbed it on using a large watercolor brush. Finally, I applied more static grass onto the wet medium and blew it, too, into an upright position, then set the base aside to dry naturally, Fig. 1. Painting it would come later, after preliminary work on the figure.

Achieving the buckskin texture. Developing a technique to simulate buckskin texture was an experiment — one that worked! The material I chose was one of my favorite painting mediums, casein, and the brand I used was Shiva, available at most art supply stores. Using an oil painting brush, a bristle flat, I dabbed a brushful of white casein against a paint cloth until most of the paint was removed. Then, as evenly as possible, I stippled the almost-dry paint



(Top and above) These photos of the completed figure are close to actual size. Note the variety of colors and textures the author has managed to incorporate into what some modelers might see as a drab, almost monotone subject.

onto the buckskin areas of the figure.

Don't stroke the paint, but instead jab or pounce it against the figure. The idea is to create a three-dimensional texture consisting of little peaks and wisps of paint, Fig. 2, and the trick is to have the paint as dry as possible while



Figs. 10 and 11. The bearskin and calfskin pouches (left) and the metallic parts on the rifle (right) were among the final items to

be painted. The cast-metal feather was painted separately and added after all other work was complete.

still workable. After texturing the entire figure, I used damp cotton swabs and wet toothpicks to clean the casein from surfaces such as the beadwork and the face of the hatchet, then allowed the texturing to dry overnight.

Underpainting the figure. After giving the buckskin texture a full day to dry, I began painting. I always underpaint first, either with casein or acrylic, usually acrylic, because the pigment seems to be ground more finely. For years I have used Grumbacher's Hyplar for underpainting, but I've never liked acrylic performance on 54 mm or smaller figures. Recently, though, I completed extensive testing of Polly S, and am convinced it will do first-rate figures. I used it to underpaint the mountain man.

Acrylics are forgiving — if you err, denatured alcohol removes the paint, or you can simply paint over the error. If you choose Polly S, disregard the advice about letting it dry for hours between coats and arm yourself with a good hair dryer.

Perhaps the greatest advantage of acrylics is that they dry fast, allowing you to rapidly establish your desired color scheme, then simply keep right on painting until you have a finished figure. I had planned to limit my use of acrylics on the mountain man to undercoats that would emphasize shadows and highlights, but the Polly S was so effective I almost stopped after applying it. I used a diluted mix of raw and burnt umber over the gray primer and the effect was startling: The thinned paint sought out the hollows and grooves and settled around raised features and the base of the beads, creating a delightful and dramatic chiaroscuro (light-and-shade) appearance. Try it!

Next, like the old masters, I painted all the flesh areas with a cool undercoat of pale blue-green. After that dried, I began lightly scrubbing on the old mas-

ters' skin formula (consisting of burnt umber, ultramarine blue, yellow ochre, light red, and white mixed in proportions to produce the desired skin color) and presto, as usual, a lively and convincing real-flesh look appeared. I set the figure aside for the Polly S undercoats to dry thoroughly, although I was sorely tempted to stop right there and pronounce the figure complete.

Using alkyds. When the undercoated areas had dried it was time to get out the alkyds. I've worked with alkyds since they came on the market a few years ago, but rarely on figures. I know of only two brands: Winsor & Newton Inc. of England, and P. D. Q. Artist Oil Paints.** Both brands dilute perfectly with mineral spirits (which I recommend in place of turpentine), and either can be used with Winsor & Newton's Liquin, a quick-drying medium, or P. D. Q.'s Lolar Glaze Medium, but both tend to make the paint glossy.

On a disposable palette, I squeezed small, pea-sized blobs of raw umber, burnt umber, ultramarine blue, cerulean blue, Naples yellow, yellow ochre, sap, green earth, light red, and titanium white. I blended raw umber and yellow ochre, diluted them quite thin with mineral spirits, then flowed this wet mixture over all the texture material on the base. Then I diluted a darker mixture of burnt umber and ultramarine blue and, with the tip of a loaded brush, touched the bases of plants and rocks, flowing the color into the recesses and creating basic shadows.

Next I added various blends of greens and light red, flowing the greens down the sides of the taller grasses and touching the red lightly against some of the rocks. As these colors are setting up

(alkyds dry rapidly, far faster than oils), provide some interesting light values by dry-brushing the upper surfaces of vegetation with touches of white tinted with yellow ochre, Naples yellow, or the umbers. This enhances the depth of the groundwork. Now, flow darker colors, such as greens mixed with umbers, on root areas and around the bases of rocks to create shadows. You'll find this method of flowing the color into the base yields natural color transitions.

More skin tones. Next I mixed the old masters' skin formula once again, this time in alkyds, and lightly rubbed on some color in the flesh areas. Incidentally, the brushes that work best for me for this sort of blending are short flat sables, either almond-shaped or contour rounds. I highlighted several areas with rubbed-on white and darkened others with a mix of burnt umber and blue. This mix yields better, more lively shadows than black.

While the main figure was drying I started on the knife and sheath, Fig. 3. Step one was to flow on the burnt umber and blue dark mix, with more blue added before thinning, and allow it to settle in all the recesses, emphasizing every bead. Flow the same color into the shadow areas all over the figure — behind the pack and under its flap, behind the belt buckle, on the moccasins, and so on. Work delicately, avoiding sharp contrasts. The idea is to define the beadwork, fringes, and boundaries such as where the hat joins the hair.

After flowing the dark mix into the grooves and detail of the beard, hair, and moustache and allowing it to dry, I added light red and white to the dark paint and lightly scrubbed over those areas with it, then highlighted the hair further with a cotton swab dipped in mineral spirits. As a final touch, I gently dry-brushed a still-lighter tint of the same color on the uppermost edges of the hair masses.

*Winsor & Newton Inc., 555 Winsor Dr., Secaucus, NJ 17094.

**P. D. Q. Artist Oil Paints, 6059 Larchmont Ct., San Jose, CA 95123.

I painted the hat, Fig. 4, dark gray using a mix of ivory black, yellow ochre, and a touch of white. Use a dark blend of burnt umber and ultramarine blue under the brim to define the hatband, and for creases and dimples in the hat. With most of the paint wiped from the brush, rub and scrub Naples yellow on the upper parts of the hat to develop highlights. Although rubbing and scrubbing are hard on brushes, you'll appreciate the controlled blending they make possible. This is a good use for worn brushes.

Add more skin color with a small stub of an old watercolor brush. Sparingly apply thinned light red to the cheeks, lips, sides, and tip of the nose. Using a No. 1 red sable, a great brush because it holds little paint, apply burnt umber to define shadow details on the face, Fig. 5.

Highlighting the face. Highlight the upper and outer planes of the nose and nostrils, define with a darker color, then blend. Draw a burnt umber line between the lips, then soften it in the middle. Add more light red to the lips, and blend burnt umber into it on the upper lip to help it recede properly. Lastly, blend a touch of white along the top side of the lower lip, emphasizing its proper plane and avoiding a lipstick look. Paint the whites of the eyes with a mix of raw umber, Naples yellow, and white. Around the eyes, rub a little violet in the socket area for natural color and depth, Fig. 6.

While I could offer stroke-by-stroke face painting methods, let me suggest something better. The greatest artists who ever lived have, at one time or an-

other, copied the works of artists they admire. By doing this, you are forced to not only learn the techniques, but to analyze how the artist achieved his effect. Obtain some good reproductions of portraits by artists whose works you like, Rembrandt for example, and try to duplicate a face, with all its colorations, on your figure. I bet you'll be amazed — and pleasantly surprised — at the results. The same holds true for hands, boots, and uniforms. You'll find that great artists use some surprising colors in highlights and shadows.

Coloring the buckskin and beads.

Dilute a mix of raw sienna and raw umber with mineral spirits and use a No. 6 red sable brush to wash the color over the casein-textured shirt, trousers, and breechcloth. While these areas are still wet, gently stroke a less-diluted darker mix of the same colors around the shadow areas, Fig. 7. For me, this step was just about like painting a blotter. I brushed my darkest mixture into the deepest parts of shadows and used it to define shapes and details like those outlining the beadwork, and then flowed diluted umber over the fringes where they joined the sleeves, Fig. 8. The paint settled naturally in the recesses, and I then worked it out over the belt and straps, and finally over the breechcloth, which I wanted darker than the rest of the buckskin.

I arbitrarily decided to paint the moccasins with authentic red quillwork. I found no magic, easy formula for painting the beads; I simply painted each bead and quill individually with the thickest paint that I could manipulate. Later, to complete the work, I decorated the sides and black uppers with white bars and evenly spaced green triangles outlined in yellow. (My reference for this was color photos from a museum.) I also added black triangles over the yellow bead trimming on the sleeves and legs.

I painted the shoulder straps and the tobacco pouch star turquoise blue, and carefully added red, white, and black beads, Fig. 9. The knife was painted separately, first with red and, after that was dry, the other colors, again, bead by bead. I colored the handle using raw umber and white so it has an ivory, elkhorn look. For the powder horn I chose an amber color to represent a cow's horn with a blackened tip.

Finishing up the details. My mountain man's long flannel underwear is faded red, as is his tomahawk handle. I painted the small fur pouch to look like bearskin and the hip pouch to look like soiled, worn calfskin, Fig. 10. Rawhide seemed a logical choice for the braided hatband, so I highlighted its upper surfaces with a dry-brushed mix of yellow ochre and white (earlier I had flowed dark umber over it to settle in the twists). I added a brass keeper simply because the bit of color looked good.

I used light grays and some black at the tip to make the hat feather convincing, but not overly bright. Remember, these lads often had dirty paws, and just about everything they touched had a stained, earthy look. I refined the lights and darks of the hat with paint but I could have used pastels to create a dusty look.

I touched up the hatchet head, rifle barrel, and lock with a cold blue-gray and detailed with blue and umber in varying proportions. Earlier, I had carefully painted dark umber around the base of each brass nail on the stock, so now I accented the brass itself using the following method: Dip a toothpick deep into *unstirred* brass paint and put a small blob of it on the palette. Using the tip end of another toothpick, place a dot of the brass pigment on each of the nail heads, Fig. 11. This is far easier than trying to paint those minute circles by hand.

When I was sure the steel parts of the rifle were dry, I rubbed a soft graphite pencil over them and followed it with a soft rubbing with a cotton swab. The resulting metallic effect is quite realistic!

From this point, completing the figure is a matter of careful study and patient final detailing, highlighting, and darkening. This is the right time to set the figure aside for a spell, critically looking at it in different lights and from various positions. When I was reasonably satisfied, I covered a 4" wood cube with real buckskin, adhering it with 3M spray adhesive. I then carefully glued on three rows of authentic Indian beads, added brass nails, and used a Hot Tool* to brand "1830" on the leather.

After I misplaced the pouch ties supplied with the kit, I made replacements from thin sheet lead. This is a handy modeling material, and a good source for it is the lead foil seals that come wrapped around the necks of wine bottles. I place the seals in a jar, add lacquer thinner, and after a brief soaking, scrub the paint off the seals with a toothbrush. That done, I burnish the lead smooth by placing it on top of an old phone book and rubbing it in a circular motion with a spoon. The result is a slick, shiny piece of very useful thin lead.

The final step in modeling the mountain man was attaching the feather with Hot Stuff. Deciding if a figure is finished is always hard for me, so my wife and other friends decided this one was now complete!

FSM

REFERENCES

- Russell, Carl P., *Firearms, Traps, & Tools of the Mountain Men*, Alfred A. Knopf, New York, 1967.

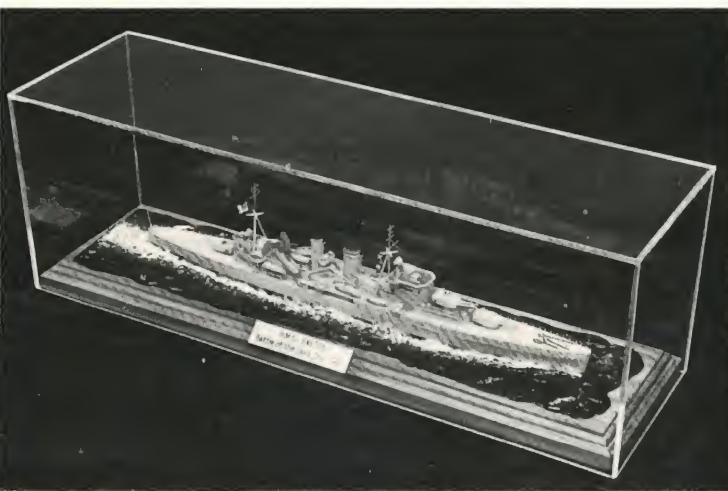
*Available from Santos Miniatures, P. O. Box 4062, Harrisburg, PA 17111.

Meet Bill Tilton

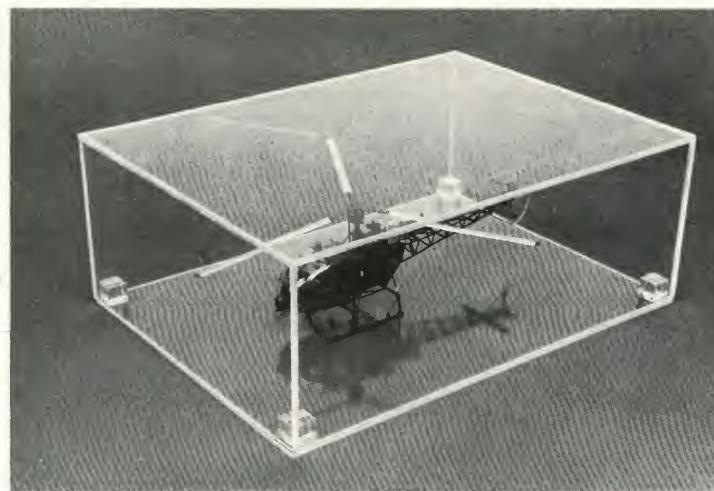
A modeler for over 40 years, Bill Tilton retired from the Regular Army as a colonel after 31 years of service. During World War Two he served as an army engineer in the Pacific theater, and his subsequent tours of duty included Korea, Canada, Africa, and Germany. He writes that he "built aircraft almost exclusively until during my final Army assignment in Germany I got myself hooked on miniatures."

Now a full-time professional artist with his paintings in over 400 private, corporate, and government collections, Bill holds a Master of Fine Arts degree from the University of Denver. He has been an illustrator, art director, and artist for various companies, including Walt Disney's studios.

Bill recently completed a historical novel about buffalo soldiers that he hopes to eventually produce for television or as a motion picture. Today he and his wife Alice live in Alexandria, Virginia, where Bill maintains his studio and workshop.



Each display case should be in harmony with the model. The proportions should be pleasing and the model should not seem



Both photos, FINESCALE MODELER: A. L. Schmidt
crowded into or lost in the case. These photos deliberately accentuate the cases; in reality the plastic is nearly invisible.

How to make clear acrylic display cases

Protecting and preserving your models with plexiglass

BY DENNIS MOORE

DUST IS the worst enemy of any fine model. Try as we may to keep an uncovered model presentable, any model left out in the open inevitably becomes coated with dust and grime. The only solution is to store the model in a case or windowed cabinet.

After I'd won a few IPMS trophies, I was determined not to let my winners be ravaged by dust, so I began looking around for a plastic case that would protect them. I discovered that commercial cases were either designed for 1/72 scale aircraft, and small ones at that, or were long and narrow and better suited for autos, small ships, and armor models than for the helicopters and

large ship models that I wanted to display. Having rummaged through a pile of old modeling magazines vainly looking for something more suitable, I decided to let my fingers do the walking through the Yellow Pages. I drew a blank at the display and showcase firms I called until, finally, one of them told me that I could probably make what I was looking for myself and suggested that I call a local plastics dealer.

Buying the plexiglass. The plastics dealer told me I needed $\frac{1}{8}$ " sheet plexiglass and that he'd cut pieces to whatever sizes I required. The first model I wanted to protect was a 1/50 scale Indian HAL SA 315B Cheetah, a license-built version of the French Aérospatiale Lama helicopter. I thought the model would look best if the case were slightly longer, wider, and higher than the chopper so that it would not look lost in a case that was too large or cramped in one that was too small.

After determining the dimensions, I ordered six pieces of $\frac{1}{8}$ " plexiglass cut to size. I wanted a case 10" wide, 15" long, and 8" high and I wanted the top to rest on the side and end pieces, so I ordered two pieces 10" x 15" (the top and bottom), two pieces $7\frac{3}{4}$ " x $14\frac{3}{4}$ " (the sides), and two pieces $7\frac{3}{4}$ " x 10" (the ends), Fig. 1. I also bought four $\frac{1}{4}$ " clear drawer-pull cubes that I planned to cement to the corners of the bottom sheet: These would index the upper portion of the case to its bottom piece, thereby preventing the upper portion from slipping on the bottom piece and possibly damaging a model.

By the way, it doesn't matter which brand of plexiglass you order: The most common brands in the U. S. are Du Pont's Lucite, Rohm and Haas' Plexiglas, and American Cyanamid's Acrylite. In Britain, ICI's Perspex is most common. All are similar acrylic plastics (methyl methacrylate resins if you want to be technical) and all are suitable.



FIG. 1 BASIC CASE ASSEMBLY



FIG. 3 SMOOTHING ROUGH EDGES



Fig. 2. Sheet plexiglass is always protected on both sides from scratches by adhesive-coated paper during shipping and machining. Remove the paper before assembling your case.

Also, if there's no plastics dealer in your area, most hardware stores will order any quantity of plexiglass you require.

When you pick up the plexiglass, also buy a bottle of plexiglass cement and a tube of Blue Magic metal polish cream or some other cream or liquid polish for plexiglass. You'll use the polish to rub out any scratches in the plastic (I prefer the liquid because it leaves less residue). If you already have a supply of IPS Weld-On #3 cement, it'll work fine. Plexiglass cements are similar to the liquid plastic cements we use on kits in that they melt a small quantity of the surfaces being joined, causing them to fuse together when the cement evaporates and the plastic rehardens. (However, most liquid plastic cements won't work on plexiglass.)

Removing scratches. Sheet plexiglass is always protected on both sides by an adhesive-coated paper, Fig. 2. Peel off this paper before assembling the case. If, in spite of the paper, the plastic has been scratched, simply rub out the scratches with plastic polish. If some of the adhesive from the paper sticks to the plastic, remove it with a soft cloth dampened with naphtha, cigarette lighter fluid (also naphtha), or mineral spirits. Don't use stronger solvents such as acetone or lacquer thinner because these will etch plexiglass.

After you've removed the paper and

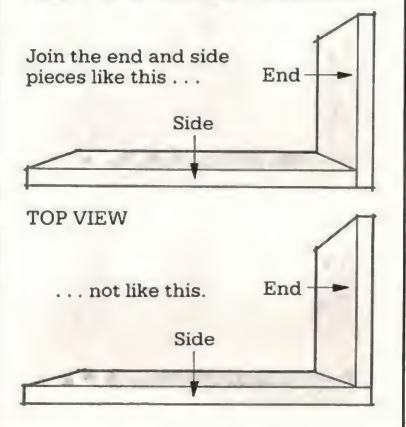
any scratches, check the edges of the sheets for saw marks. This has never been a problem for me, but a friend says he's had pieces that came with rough edges. If it happens to you, tape a full sheet of No. 400 grit wet-or-dry sandpaper to a flat, waterproof surface, Fig. 3. Moisten the sandpaper with water and rub the rough edges on the sandpaper until they are smooth. Be sure to hold the plastic at a right angle to the sandpaper to preserve the square edges.

Assembling the sides and ends. Begin assembly by cementing one of the side pieces to an end piece. If, as I do, you want the end piece to extend the full width of the case, be sure to butt the end piece against the side piece as shown in Fig. 4. I apply IPS Weld-On #3 with a draftsman's ruling pen, touching the point gently against the seam; capillary action draws the cement into the seam, Fig. 5. Needlepoint applicators sold in plastics stores, Fig. 6, and even fine-tipped brushes also make good applicators. Hold the pieces for about a minute to give the cement time to weld the seam. Then check to see that at least half of the seam is filled with the cement. If it isn't, apply more cement. Work in a well-ventilated area because the fumes from plexiglass cement are toxic.

Once that first "L" shaped section is done, it's simply a matter of repeating

the same steps for the remaining side and end pieces. You can eyeball the right angles — because the pieces were all cut on the square, it's hard to go wrong. If you don't trust your eyeballs, place a sheet of graph paper or some other paper with a grid pattern on your workbench and use it to ensure squareness, or use a T-square or combination gauge. After the last joint has dried for several minutes, very carefully turn the topless and bottomless box over and run some more cement into the joints that were on the bottom during the first

FIG. 4 SIDE AND END ASSEMBLY



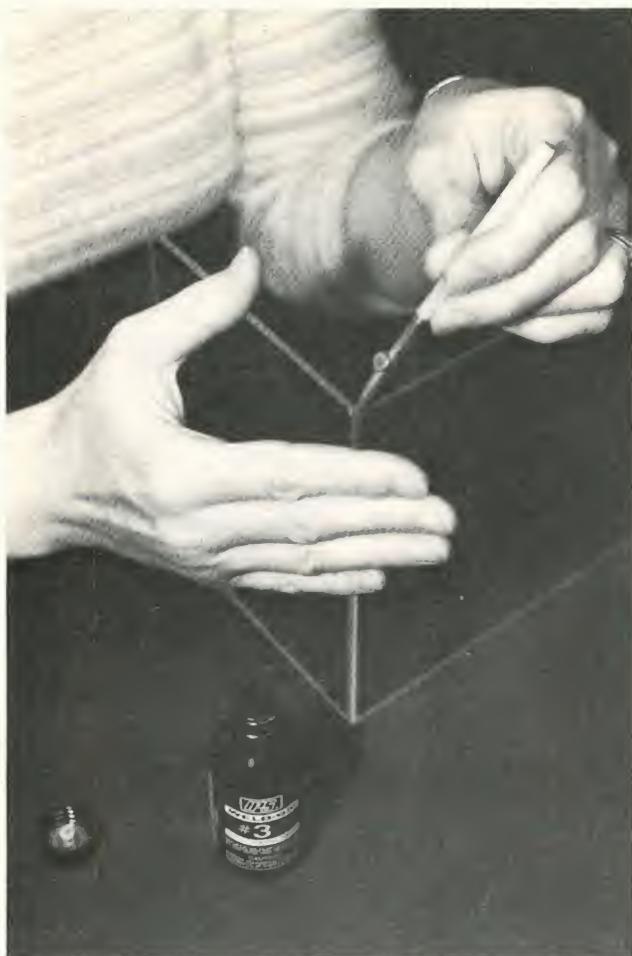
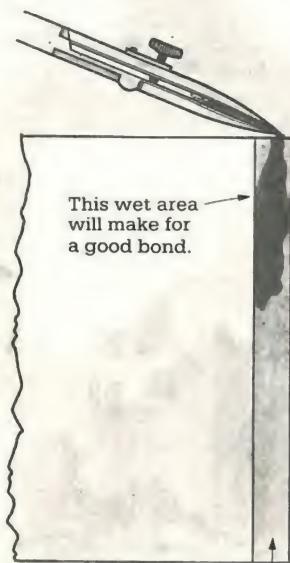


FIG. 7 FILL ALL SEAMS WITH CEMENT

After you've joined all of the end and side pieces, turn the case over, and apply cement to all seams that were not completely filled during initial assembly.



Cement this area when the case is turned over.

application, Fig. 7. Often these will not have received enough cement the first time around.

During all of these applications be careful that you don't overload the ruling pen with cement. The paper that protected the plexiglass sets up a strong charge of static electricity when it's removed. This static charge has occasionally pulled a large drop of cement right off the pen I was holding onto the plastic. If this happens to you, don't have a heart attack; simply blow on the cement until it evaporates, or blot it gently with a tissue. Don't rub it or you'll mar the surface. If you dab up the cement or let it evaporate, the worst you should wind up with is a mark that looks like a water stain; this can be buffed out with plastic polish after you have completed the case.

The top. Turn the case on its side and begin to cement on the top using the same technique as previously. If the sides are especially long, support the side from inside the box with your hand so that it will not bow. The top and the side should be flush all along their length. Plexiglass is available in many thicknesses, so if you want a case to cover a large diorama, you might want to consider $\frac{1}{4}$ "-thick sheets because they would be less likely to warp or bow. Once everything has been fas-



FINESCALE MODELER: A. L. Schmidt

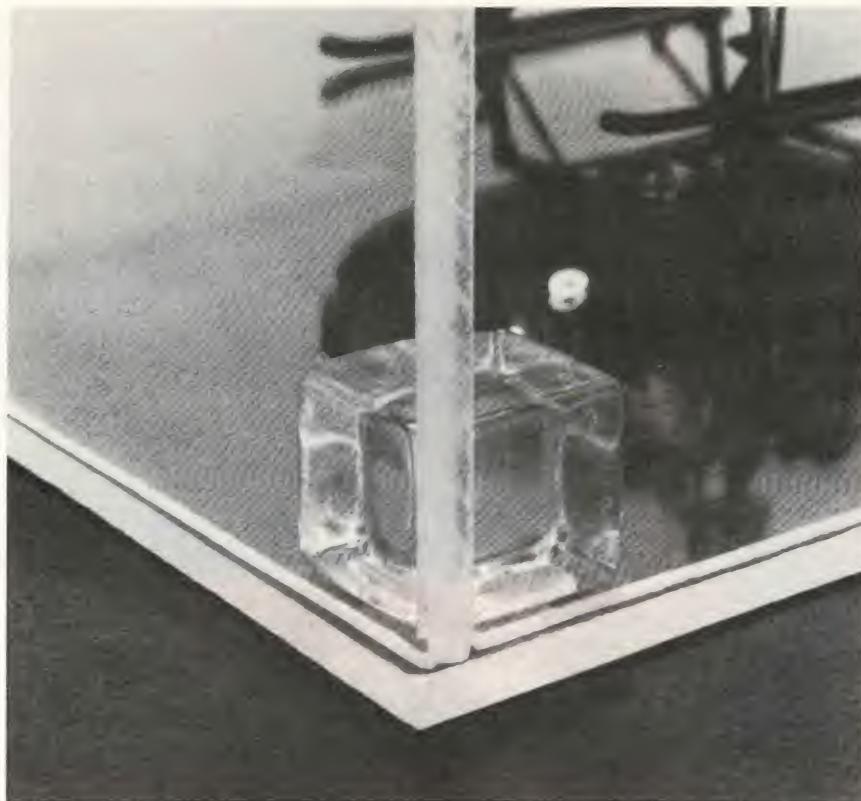
Fig. 6. You may want to apply plexiglass cement with a needlepoint applicator. Return the cement to its glass bottle after each working session or it will evaporate through the plastic container.

Fig. 5. Capillary action draws the plexiglass cement into seams where it dissolves a small quantity of the plastic, causing the mating surfaces to fuse together.

tened together, check one last time that all seams are filled with cement. Then let the box sit for several days until all the seams have hardened.

The bottom piece. If you are building a case that is going to cover a model permanently attached to a base, such as my 1/400 scale Heller *Dunkerque* on the front cover, you don't need a bottom piece unless you plan to stack the cases. If the model has no base or you want to stack the cases, obtain the clear plexiglass drawer pulls I mentioned earlier and cement one to each corner of the bottom piece, Fig. 8. Place the cubes $\frac{1}{8}$ " in from each corner. You'll now be able to remove the case from its bottom at any time, and you'll be able to slide the case around without any danger of the case sliding into the model. One final option is to add rubber feet to the bottom, Fig. 9; these make it easier to pick up the case, prevent the bottom from being scratched, and add a nice touch. Self-adhesive rubber feet are generally sold in electronics stores.

Cleaning the case. Remove any fingerprints that have accumulated during construction with Windex, any other household glass cleaner, or 70 percent isopropyl alcohol (rubbing alcohol). You may also wash the case periodically with dishwashing detergent and warm water; this will reduce any static elec-



FINESCALE MODELER: A. L. Schmidt

Fig. 8. Dennis cements clear acrylic drawer-pull cubes at each corner of the bottom piece. These index the bottom piece with the rest of the case, ensuring that the upper portion of the case can't slide against the model.

trical charges. To prevent scratches when drying the case, let it air dry or wipe it gently with a damp chamois or soft cloth. Believe me, it's a lot easier to wash a sturdy case than it is to clean a delicate model! If you desire an especially high gloss, you may apply a thin coat of any good wax such as Johnson's paste wax to the case. Lightly polish the wax with a piece of soft flannel.

Advanced projects. If you're used to working with styrene, you should have

no trouble learning how to saw, drill, bend, draw-form, and even vacuum-form plexiglass so that you can create display cases with shelves to hold several models or design cases to fit into a specific location. (I buy my plexiglass precut simply because I'd rather spend my leisure time building models, not because the material is difficult to work with.) As is styrene, plexiglass is a poor conductor of heat and melts at a relatively low temperature, so work slowly, lubricating tools frequently with water or a soluble cutting fluid. Should you want to join plexiglass to wood, metal, or some other material, use epoxy or one of the super glues. The two books listed below contain much information on working with sheet acrylics, and there are many others.

A case to protect an average 1/48 scale fighter should cost about \$5 and one to cover a large 1/400 ship about \$11. That's really not much when you consider the hours we spend to turn out the jewels in our collections, and how easily they can be destroyed by those nasties in the air.

FSM

REFERENCES

- Cope, Dwight, *Cope's Plastics Book*, The Goodheart-Willcox Co., Inc., Chicago, 1960.
- Newman, Jay Hartley, and Lee Scott Newman, *Plastics for the Craftsman*, Crown Publishers, Inc., New York, 1972.

FIG. 9 SELF-ADHESIVE RUBBER FEET

VULTEE VANGUARD



A 1/24 CARD MODEL KIT

- FEATURES FULL COLOR PARTS.
- PHOTO ESSAY HISTORY OF P-66.
- ILLUS. INSTRUCTIONS. DUPLICATE PARTS. U.S.-CHINESE MARKINGS
- KIT - \$5.50 postpaid Catalog - 25¢
- META MODEL - V
- PO BOX 221
- BATAVIA, NY 14020



One of the largest selections of plastic kits in the state with over 2000 square feet of aircraft, cars, trucks, and military models.

Plus one of the largest selections of die cast vehicles anywhere.

Open every night til 8 p.m.
Master Charge/Visa accepted.
"You'll love the prices, too!"

HAROLD'S PLACE, INC.
522 Chestnut St., Lynn,
MA 01904

TIRED OF WAITING?

Modeling isn't supposed to be a waiting game. The Plastic Place features personalized service...every letter answered. We are now importing Airfix kits direct from England and have access to other English kits.

We carry all Hasegawa, Matchbox, Heller, Monogram, Fujimi, Esci, Otaki, Testors, Italaeri, Tamiya **Planes**.

Hasegawa, Matchbox, Esci, Tamiya, AIRFIX, Heller **Armor**.

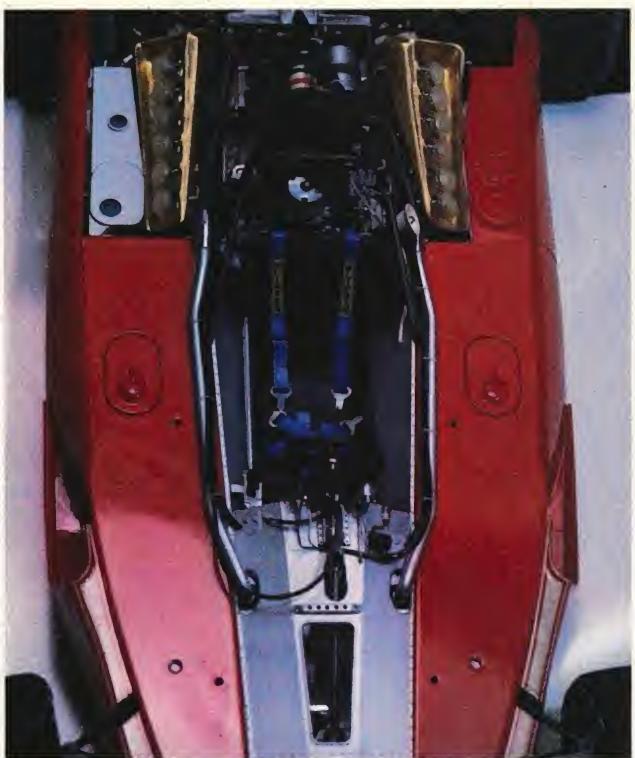
Airliners From England, Mexico, Brazil.

The full line of Micro Scale Decals and solutions. Badger airbrushes, Intematic compressors.

Floquil and Polly S paint, Squadron signal books, Koku Fan, Air International, other magazines. We pay half postage. You'll like this outfit!



FOR CATALOG WRITE:
THE PLASTIC PLACE
6003 S. Salina St. Syracuse, NY 13205



Matra

It's difficult to obtain close-up photos of Grand Prix race cars, so these shots should be a godsend to modelers. Paul took all of the photos at the Long Beach Grand Prix.

FORMULA 1 race car cockpit detailing



The techniques are every bit as applicable to aircraft

BY PAUL BUDZIK



Tyrrell

(Above and top left) Scratchbuilt six-point harnesses add to the realism of the author's 1/12 scale models of Grand Prix race cars.



Matra



Williams

IT'S TRUE that your model will first be judged on the quality of its assembly, finish, and markings. All the details in the world won't help if you have spoiled the overall effect with bad paint and decals. However, if you've reached the point where you can assemble and paint reasonably well, there's nothing more satisfying than scratchbuilding detail parts that will really dress up your model.

This is especially true for the cockpits of 1/12 scale race cars. For one, most of the kits now available are excellent, so you start with a good foundation. For another, the models are large enough that the details can be seen and appreciated. Third, I'm fascinated by a race car's cockpit because it is the driver's workplace; an accurately detailed model cockpit provides an observer

with a close-up view of a seldom-seen but often fantasized about area.

Research. Ideally, you should begin with close-up photos of the full-size car you're modeling. Unfortunately, as far as Formula 1 cars are concerned, this may be difficult because U. S. Grand Prix race organizers are not very sympathetic to the modeler. In the past, \$100 bought limited access to the pits at the Long Beach Grand Prix but even that option is no longer available. In many cases, therefore, you'll have to trust the accuracy of the kit manufacturer's research — I highly recommend Tamiya's 1/12 scale kits.

However, photos of instruments, seat

Fig. 1. The Williams six-point harness is a favorite with race car drivers. Similar harnesses are used in aerobatic aircraft.



Renault



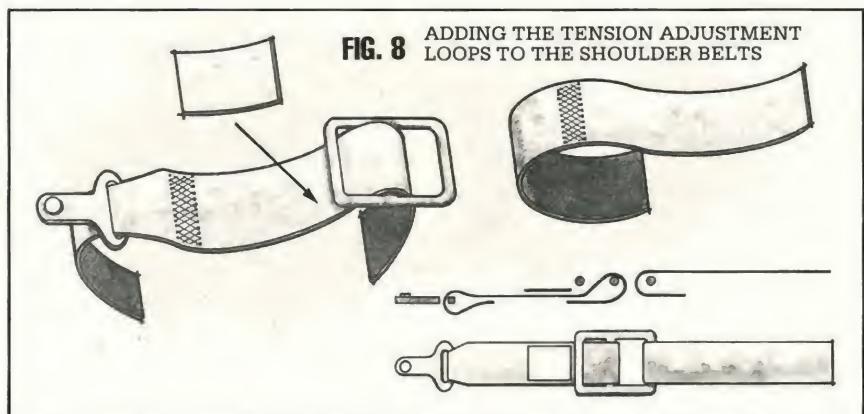
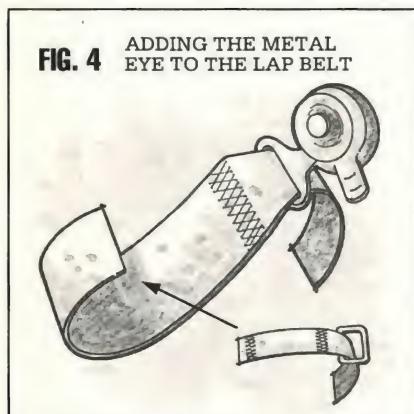
Lotus



Fig. 2. These padded shoulder belts bolt to the chassis behind the cockpit just forward of the oxygen bottle.



Fig. 3. On the Williams Ford the lap belts are anchored to the outer wall of the cockpit.



belt harnesses, and accessories are more readily available and I've listed several sources at the end of this article.

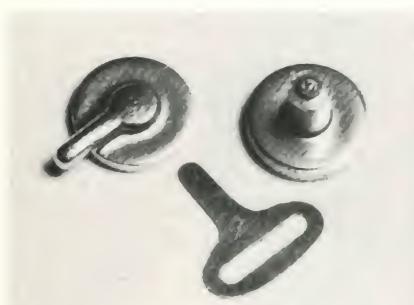
Fortunately, Can-Am, Trans-Am, GT, and drag racing fans usually have no trouble taking photos of full-size cars at local races — just remember to attend during practice and qualifying times when the crowds are smaller.

Building the harness. By way of background, the cockpit of a modern, single-seat race car is an extremely confining space. Drivers are, as a rule, not large and the cars are frequently

built around a specific driver, which is one reason why no two chassis are exactly the same. The driver must be fastened into the car in such a way that he has an instant feel for what the car is doing: A six-point harness provides the necessary restraint. The harness consists of a lap belt, two shoulder belts, two crotch belts, a tension adjuster for each shoulder belt, and a master buckle called a quick-release, Fig. 1. The two halves of the lap belt buckle directly into the quick-release. The crotch straps pass through eyes sewn onto the lap

belt. The shoulder belts are then brought through loops and are buckled into the quick-release. Figure 2 shows that the shoulder belts are often fastened to the chassis with metal loops and bolts; the lap belts are fastened to the outer sides of the cockpit walls, Fig. 3.

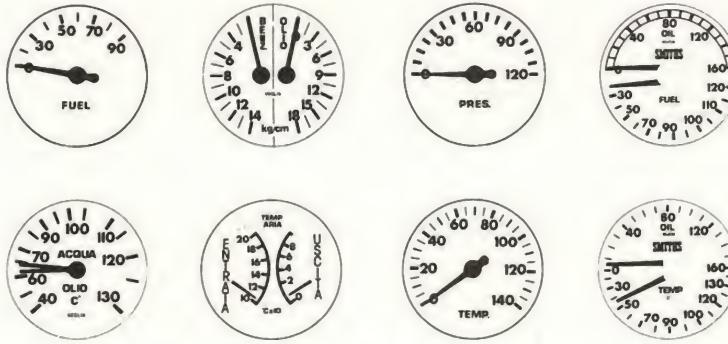
I start construction with the lap belts. I make these from cloth tape of an appropriate color and cut the tape so that it is $3\frac{1}{4}$ scale inches wide. About midway between the edge of the seat and the buckle I install an oval eye made from .018" stainless steel wire. I fasten



Figs. 5 and 6. Paul makes the tangs that snap into the quick-release from aluminum cut from soft drink cans. The quick-release is a two-part lost-wax casting, but laminated sheet styrene also works well.



Fig. 7. Make tension adjustment loops for the shoulder belts from .018" stainless steel wire, solder the ends, let cool, and file the front flat.



The original art has been reduced about 50 percent and this PMT can now be further reduced photographically to produce the final negative film containing the scale faces.

FIG. 9 GAUGE FACES ON A PMT

this eye to the lap belt with a small piece of the same kind of cloth tape used for the lap belts, Fig. 4. The lap belts lock into the quick-release by means of metal tangs, Figs. 5 and 6. (The left buckle is left free when the driver is not present, but the quick-release is usually left attached to the right lap belt.) I make the tangs out of aluminum cut from soft drink cans. This metal cuts easily with scissors and can then be filed to the exact shape required.

The shoulder belts come next. They are made of cloth tape 2 scale inches wide and are slightly more complicated than the lap belts because each contains a tension adjustment loop or buckle. The upper portion of each shoulder belt usually carries a manufacturer's name; I make the names from dry-transfer lettering. The upper end of the lower portion of each belt passes through the tension adjustment loop or buckle and has a tang on the other end which locks into the quick-release. (The tangs on the shoulder belts are slightly smaller than those on the lap belt.)

Tension adjustment loops are easily made from .018" stainless steel wire

bent into a square "8," Fig. 7. Complete the job by soldering the wire ends and filing the top surface flat. Then cut a small piece of tape to represent the reinforcement sewn into each shoulder belt just below the tension adjustment loop and pass the lower end of each shoulder belt through its tang, Fig. 8.

Crotch straps are easy. I generally cut two pieces of tape 1 1/4 scale inches wide. They come from either the front edge of the seat or a slot cut in the seat. I do not make loops in the ends of the straps as this interferes with the way they lie on the seat.

The last item in the harness is the quick-release. I used to make these by laminating 2 1/2 scale inch discs of .040" styrene, then filing the plastic to shape. This worked well, but I've since prepared rubber molds so that I can make quick-releases using a lost-wax casting technique, Fig. 5. (I also use lost-wax castings for complex shoulder belt tension buckles.) Make the lever that releases all of the belts from styrene rod filed to shape or cast it along with the rest of the quick-release.

Modeling gauges. I have never been happy with dial faces made from decals.

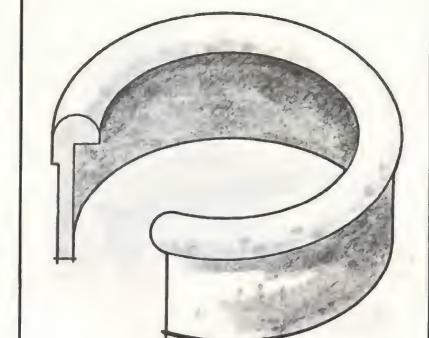


FIG. 10 BEZEL WITH INSIDE AND OUTSIDE SHOULDERS

The printing usually is not sharp enough for my taste and coating the decals with clear finishes to simulate glass covers isn't convincing — the finish is too irregular. I have found that making dial faces from photographic negatives and mounting them in scratchbuilt bezels produces excellent results.

With this technique you first draw a much-oversized dial face on paper and then shrink it down through photography to a negative of the correct scale. The negative becomes the dial face.

You must first decide how large you want your finished dial. Then scale up your artwork to an even multiple of the dimension so that you have a comfortable size to work in. Many professional artists prefer to work "two-up"; that is, their original is twice the size of the final art, but you may feel more comfortable with original art three or even four sizes up. Work on a good grade of white drawing paper with a permanent black ink. You may find dry-transfer lettering and lines a big help. Make sure you keep your lines thick enough and leave enough space between letters. I'll explain why this is important a little later on.

Take your inked drawing to a local photostat house (look in the Yellow Pages under "Copying and duplicating services"). Ask the camera operator for



(Left) Fig. 11. The dial faces are ready to be cut out and installed in these scratchbuilt mounts. (Above) Fig. 12. These gauges are ready for installation in a turbocharged Renault. Although aircraft usually have more instruments than race cars, the same techniques can be used to superdetail airplane cockpits.



Meet Paul Budzik

Married, with one son, 30-year-old Paul Budzik is a dentist in Fresno, California. He's been a modelbuilder since the age of four or five, and over the years has become quite expert at miniature machine work and making lost-wax castings, many of which he uses in his 1/12 scale race car models. His other hobbies include photography and O scale model railroading.

a line negative however many times smaller than the multiple you enlarged your artwork by.

If your original is very large, the photographer may have to go through two steps to shrink your drawings the desired amount. He will do this by making an intermediate photostat (which he may call a PMT, a photomechanical transfer) that will be partially reduced. When he shoots his final negative, he will take it down the rest of the way. I have found it economical to have a number of PMTs made; I paste these up into one large sheet containing enough dials for several cars. The photographer can then use this sheet to make

the final negative. Figure 9 contains eight gauge faces from a PMT: You can have these reduced to whatever scale you need for your model.

When the photographer shoots the final negative, he'll try to reproduce every line on the original. He does this by changing the exposure time. The length of the exposure changes the thickness of the lines in the final negative. If you used some extremely fine lines on your original, then, as he attempts to hold those lines, the other lines will become wider and the letters may start to blend together. The same will happen if you spaced the letters too closely. If you spaced the lines correctly and chose proper line weights, you'll now have a black negative with clear areas for the numbers and indicators. If you want white dial faces and black numbers ask the photographer for a "film positive."

The next step is to paint the sheet on the emulsion (dull) side so that the numbers and indicators appear white or whatever color they should be. If you have a redline indicator or colored numbers, use a fine brush and carefully paint those areas. I then spray white lacquer over the entire back of the sheet. When the lacquer has dried, cut out individual dial faces.

Bezels. For maximum realism, I almost always mount dial faces behind brass or plexiglass bezels made on a lathe. I turn a ring of the desired diameter with an inside and outside shoulder, Fig. 10. The inside shoulder supports the dial face while the outside shoulder locates the dial face in its mount. Here's my procedure: I chuck a piece of rod stock and drill a hole in the end the size of the dial face. I then de-

velop the inside shoulder using a tool ground for inside turning. After this, I remove the end of the rod with a cutoff tool. I then turn down the end of the rod and press fit the cutoff portion onto the rod. In this way, I can finish the face of the bezel and develop the outside shoulder. I am now ready to glue or solder the bezel to its mount, which I've made from brass or plexiglass.

The next step is to turn a piece of clear plexiglass and press fit this into the back of the bezel; it supports the dial face and forms the rest of the gauge. Drill holes in the back of the plexiglass to accept any wire connections that will be visible on the completed model. Figures 11 and 12 of unassembled and assembled gauges should convince you that the photographic approach produces convincing scale instruments.

Other details. If the bodywork around the driver on your model is removable, you may want to include all sorts of additional details — switches, fuse box, and wiring harnesses are some of the possibilities. Most of the front suspension may be exposed when the bodywork is removed. In that case, pay special attention to spring and coil damper units, brake piping, and the rigging to the adjustable roll bar if there is one.

Other details include an oxygen bottle and its hose, Fig. 2, and the fire extinguishing system. (In case of fire, the driver, protected by a fireproof suit, breathes oxygen through the hose, while the fire extinguisher floods the cockpit with Halon gas.)

I also like to make operating universal joints for the steering system, Fig. 13. I machine these from aluminum and brass. Finally, if the pedals are visible, I hook up the appropriate cables.

As you've seen, superdetailing a race car cockpit doesn't require exotic tools or materials. It does call for patience and close attention to detail, but the results are worth every hour put into the project.

FSM

REFERENCES

- Lauda, Niki, *The Art and Science of Grand Prix Driving*, Motorbooks International, Osceola, Wisconsin, 1972.
- Nye, Doug, *The Grand Prix Tyrrells: the Jackie Stewart Cars 1970-73*, Macmillan, London, 1975.
- Nye, Doug, *Theme Lotus: 21 Years of Grand Prix and Indianapolis Cars*, Motor Racing Publications, London, 1978.
- You may also want to check out an annual publication, *Autocourse: the Review of International Motor Sport*, published by Haymarket Press Ltd., 5 Winsley Street, London W1, to see if it has information on your car's equipment.
- The catalogs of mail-order racing equipment firms also contain numerous photos; one such catalog (\$2.50) is published by Auto World, 710 North Keyser, Scranton, PA 18508.



Fig. 13. Paul says that the universal joints in this 1/12 scale brass and aluminum steering assembly work perfectly, with no slop or binding.

22 easy ways to build museum-quality wood ship models.

The famous ship model fleet from Scientific is designed to make assembly easy. All feature pre-carved, solid hardwood hulls eliminating the need for tedious and difficult plank on frame construction. All kits also feature hardwood decking, masts and yards, precision cast metal

fittings, rigging cordage, antique cloth sails, wood display stand and pedestals, and easy-to-follow, step-by-step instructions.

**SEND FOR FREE
FULL COLOR CATALOG**

Kits priced from \$12.95

SCIENTIFIC

Quality Hobby Crafts Since 1928



Kit 165, Sovereign of the Seas Clipper, 24"

Kit 166, USS Kearsarge Gunboat, 27"

SCIENTIFIC MODELS INC.
340AL Snyder Avenue, Berkeley Heights, N.J. 07922



Kit 163, Cutty Sark Clipper, 24"



Kit 164, Bluenose Schooner, 24"



Kit 167, Flying Cloud Clipper, 14"



Kit 168, Eagle, USCG Ship, 13"



Kit 169, HMS Bounty, 14"



Kit 170, USS Constitution, 15"



Kit 171, Sea Witch Clipper, 28"



Kit 172, Baltimore Clipper, 23"



Kit 174, Cutty Sark Clipper, 15"



Kit 177, Golden Hind, 20"



Kit 178, America Schooner Yacht, 17"



Kit 181, Robert E. Lee Steamboat, 25"



Kit 182, Thermopylae Clipper, 31"



Kit 183, Charles W. Morgan Whaler, 18"



Kit 184 Spanish Galleon, 20"



Kit 185, Man'O War, 17"



Kit 302, Atlantic Schooner Yacht, 13 1/2"



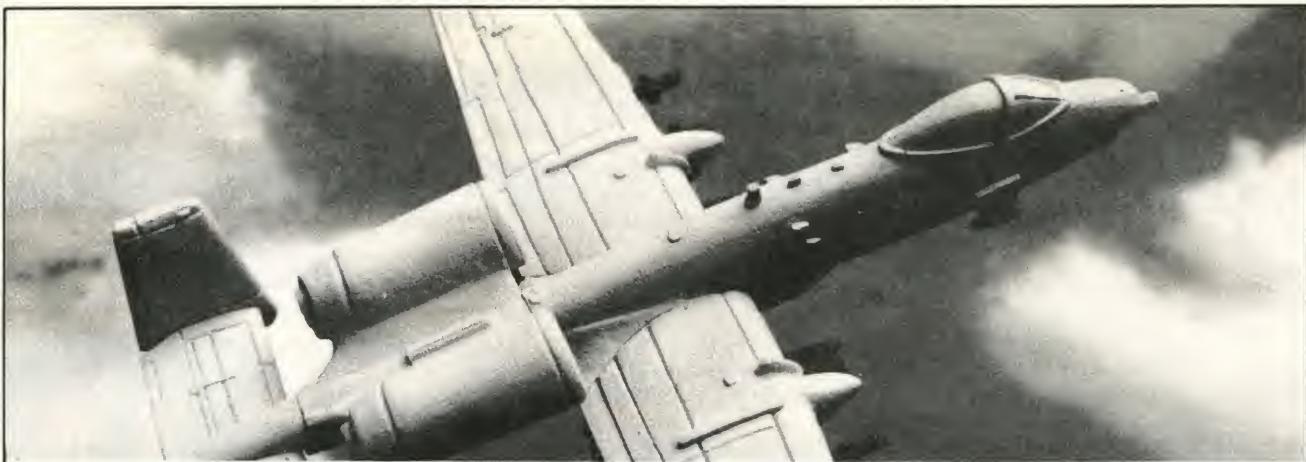
Kit 187, USS Constitution, 12"



Kit 300, USS Constitution, 28"



Kit 301, Santa Maria Flagship, 20"



Winner H. G. Wells Best Vehicular Model Series

To fully appreciate the sophistication of this plane you'd have to be 3/16 of an inch tall and Russian.

Like our tanks and ships, the GHQ line of aircraft models represent the ultimate in miniature authenticity. Exact painstaking detail in 1:285 scale.

Strike fear into the hearts of micro Russians everywhere with the U.S. A-10.

If you like detail, we've got miniatures in a

big way. For more information, product listings and prices, call now.



2634 Bryant Ave. So.
Minneapolis, MN 55408
(612) 374-2693

We put reality into every move you make.

“One of the things that makes model building so enjoyable!”

After you've spent hours assembling your model, be sure the paints you use live up to the quality of your workmanship. Whether you're a beginner or a pro...Polly S is the answer.

Polly S water-based colors provide smooth, even coverage that sticks to polystyrene like a second skin. Brushes clean with plain water. No fumes, no odors and no expensive thinners. Over 100 colors: general flats, authentic camouflage and realistic weathering colors. Ask for Polly S water-based colors at your favorite dealer.

FLOQUIL-POLLY S COLOR CORPORATION

Amsterdam, New York 12010

an  company





A quiet moment in a hectic campaign: Two GIs and their reconnaissance jeep pause at a crossroads during the Allies' push across France after the 1944 Normandy invasion. The scale is 1/35, the jeep is Italeri, and the figures are from Tamiya.



Both photos, FINESCALE MODELER: A. L. Schmidt

The scene is small, just 7½" x 12", and the composition would work for dozens of similar scenes. It's a good starter project if you haven't tried your hand at diorama construction. The trim around the base is made from 5/8" quarter-round molding.

Building your first diorama

Basic techniques you can use to construct an attractive scene in just two or three evenings

BY BRUCE CULVER

DIORAMA construction is perhaps the easiest, most relaxing, and one of the most creative aspects of scale modeling, and yet many modelers run off screaming into the night when their friends admire their latest technically exquisite efforts in modeling and say "Gee, that (Sherman, Bf 109, Brewster Buffalo) would look even better in a diorama."

Diorama building is easy because, as Bill McClanahan pointed out almost 25 years ago in his popular book on model railroad scenery*, there is very little

problem in scaling natural objects. If you make a rock (or a tree, or a gully) a tad too big, it's simply a bigger rock (or a taller tree, or a deeper gully). Combining this natural leeway in "scale dimensions" with some simple shortcuts in using and applying natural materials allows anyone to construct a realistic diorama scene. You don't need a great deal of experience, special tools, or costly materials.

My diorama was built as simply and cheaply as possible; in fact, most of the materials were either "found" items or scrap. The few materials that I had to purchase were not expensive and will last a long time.

Titled "Under New Management," the small, 7½" x 12" scene was con-

structed in only three evenings. It represents an interlude during the Allied drive across France in the fall of 1944. A dusty reconnaissance jeep from a U. S. armored division has advanced to a minor road junction in territory formerly held by the Germans, and the two crewmen are waiting for the rest of their unit. The jeep, which is the reconnaissance "peep" described in my article in the Fall 1982 issue of FSM, pretty well chose the locale and date of the diorama for me, since it was weathered to represent a vehicle operating in northern France in 1944. The rest was easy.

Choosing a subject and a design. Although this article shows one method and one set of materials to build one simple diorama, it is not intended to

*Scenery for Model Railroads, Kalmbach Publishing Co., Milwaukee, 1958. Revised edition 1967.



Figs. 1 and 2. After deciding how the diorama will be arranged, the first step is to sketch out the terrain on the base, a slab of 1/2" plywood (left). Next (right) come wafers of 1/2" Styrofoam packing



material from which the contoured scenery will be formed. Note the masking tape added to keep the edges of the base clean so that the molding could be applied later.



Color photos, FINESCALE MODELER: A. L. Schmidt

These three color close-ups show how well all the varied colors and textures of the diorama blend together. Note that all colors in the scene are subdued, and that the ground color has been worked onto the standing GI's boots and the jeep.



help only those who want to model two GIs and a jeep at a signpost. With a few minor changes, the same scene could portray two Germans and a Kübelwagen, two British soldiers and a Dingo scout car or CMP light truck, or a couple of German mechanics brewing ersatz coffee next to an Me 163B Komet sitting in a small wooded area.

Without the vegetation, much the same scene could show a couple of DAK reconnaissance types in the Libyan desert, or even a pair of Germans (or Russians) cooking a simple meal on snow-covered ground. The theme and subject are entirely up to you. The basic techniques for making the base, ground texture, and foliage are applicable to just about anything but at-sea naval scenes.

This article isn't meant to be a treatise on diorama design and composition (Shep Paine's book, *HOW TO BUILD DIORAMAS*^{*}, is), but I have three principles worth remembering when planning any scene. First, there should be something going on. That "something" doesn't have to be a grand event such as the liberation of Paris, but a viewer should be able to look at the diorama and tell you what's happening. (If he turns to you and says, "Those vehicles seem to be parked there," try again.)

Second, usually, there should be just one thing going on, a single center of interest. Otherwise, the various parts of the diorama tend to compete with each other for the viewer's attention. Third, it should be obvious that the scene has a "front," that is, that the scene is designed to be viewed from one or at most two angles, and there should not be objects obscuring the action from those viewing angles.

One of the best ways to start work on a diorama is to find a photo in a reference book that shows what you want to portray. If you don't have a definite picture of what you want, try a number of different arrangements with the models that you plan to use. Then, using the $\frac{1}{2}$ " plywood diorama sub-base and the models, roughly position the main elements, Fig. 1. Mark the positions of the models and all major scenic features with a pencil. Even when you've achieved a composition you think you like, try different arrangements. At this stage major alterations are easy to make; they get a lot harder later.

Forming Styrofoam scenery. The basic scenery shapes for my "Under New Management" were carved from Styrofoam packing material, the high-tech equivalent of orange crates. Although I've listened to modelers argue at length about the relative merits of different types of Styrofoam, any kind — from insulation, to packaging, to the crumbly variety that florists use — works

^{*}How to Build Dioramas, Kalmbach Publishing Co., Milwaukee, 1980.



Fig. 3. Knives for cutting Styrofoam, from top to bottom: large serrated carving knife, small- and large-blade modeling knives, and a spoon-end serrated grapefruit knife.

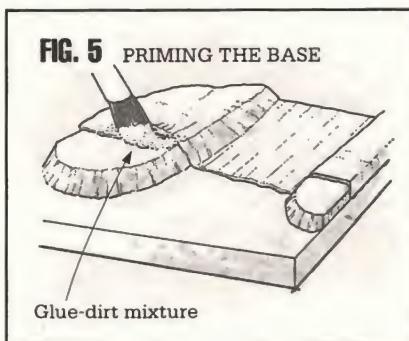


Fig. 6. After applying a "goop" primer that consists of white glue and dirt, the diorama base looks like this. Note that the hole for the tree was made before the base was primed.



fine. In fact, the stuff I used was packing from a table radio!

Figure 2 shows the three Styrofoam terrain pieces rough cut to shape. Sharp single-edge razor blades, hobby knives, or serrated kitchen knives will cut Styrofoam cleanly. Dull blades or knives will drag, causing the Styrofoam to



flake and crumble uncontrollably. My favorite tools, Fig. 3, were a serrated carving knife and a grapefruit knife with a curve at the end.

Carving the Styrofoam, Fig. 4, took only 10 minutes for all three pieces. I used the serrated carving knife for most of the shaping. The grapefruit knife was used for carving the hollowed-out areas. To finish the basic shaping, carefully go over the terrain sections with coarse sandpaper to round off the edges.

The next step was to cement the shaped terrain pieces to the base with white glue. Virtually all solvent-based glues will melt Styrofoam because of its porous, low-density plastic structure, so use only water-base glue for fixing parts in place and priming. Protect the edges of the plywood base with masking tape so you will have a smooth surface for adding the molding to them later on, then cover your work surface with newspaper. The next step, priming the base with a mixture of dirt and glue, gets a bit messy.

Scenic "primer" — dirt and white glue! Prime the Styrofoam and the bare plywood with a mixture of sifted dirt and white glue, allowing the "goop" (there's no better word for it!) to fill in small flaws, but working it into large holes that you want to save, Fig. 5. An inexpensive 1" paintbrush is the best applicator. Besides sealing the porous surface of the foam, the goop also forms a fillet between it and the wood, blending the terrain into the flat areas, Fig. 6.

On the road areas I used heavy brush strokes to help create a rough, rutted appearance. The primer will level out a good deal, but will leave shallow ruts and hollows. If you want to model a smooth road, don't prime the flat plywood with goop; instead, use only the dry soil treatment described in the next step. If you want a very rough, deeply rutted road, build up ridges and humps with several layers of dirt and white glue goop. An even easier way is to laminate a thin ($\frac{1}{4}$ " or so) slab of Styrofoam to the road, then carve or crush it



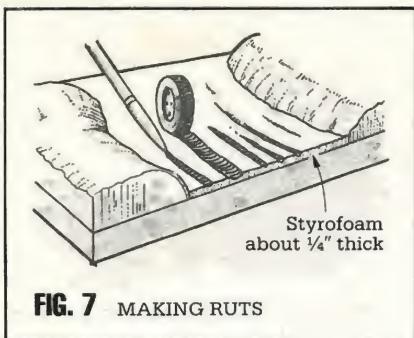


FIG. 7 MAKING RUTS



Fig. 8. The final dirt texture on the terrain and road surfaces is made by sprinkling sifted dirt over wet varnish. The road requires several applications.

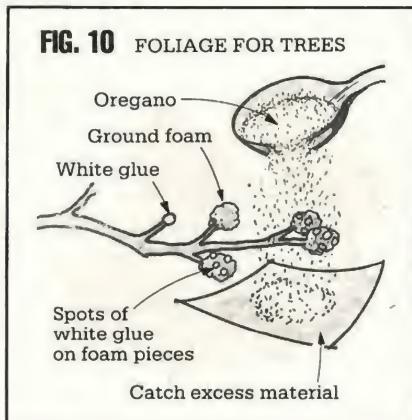


Fig. 9. Assorted pieces of dried twigs (left) and roots from various weeds and plants (right) are ideal raw material for making large and small trees and bushes.

to make irregular contours and ruts, Fig. 7.

If lumps form in the priming coat, just let everything dry and sand down any large unwanted lumps. Then brush on a second coat of goop to fill in the defects. If something doesn't look the way you want it, just keep reworking the area until you like the effect.

Next, dry soil and varnish. When the goop is dry, apply a basic covering of dry soil. I used a spray can of satin-finish polyurethane varnish, but any spray varnish that remains wet for two or three minutes after application will work. Spray an area, sprinkle on sifted dirt, and work the loose dirt into the wet varnish areas with an old paint-



brush. Don't rub or stipple too hard.

When you've covered the varnish with dirt, shake off the excess, spray an adjacent area with varnish, and sprinkle on more dirt. Continue until you have an even coating of dry dirt over the whole diorama, Fig. 8. Shake and blow off excess dirt, but don't try to brush the surface at this stage. To achieve the look of hard-packed dirt on the road, I repeated the varnish-and-dirt treatment five or six times on that portion only.

Adding vegetation. With the dirt base in place, the next step is to add the foliage, grass, and tree. Applying all of the various foliage materials took between 30 minutes and an hour. The trick here is to find miniature copies of

the plants and grasses you want to model. There are all sorts of things you can use, and most can be found in local fields and in your supermarket.

The large bare-limbed tree is part of a hackberry bush I found a mile from my house. It has excellent "miniature" bark, but there are dozens of other shrubs, bushes, small plants, and plant roots that duplicate the basic shapes of different trees, Fig. 9.

After trimming away its not-to-scale leaves, I was able to twist the trimmed hackberry cutting to make the tree more balanced — this works only with fresh, "green" cuttings. Since old, dying trees often have interesting shapes — and little foliage — I opted to model a decrepit old tree.

What few wisps of foliage there are on the tree were attached with small dabs of white glue, Fig. 10. I used green ground foam rubber from the hobby shop for living leaves, and appropriated some chopped oregano to represent dead ones.

A raid on the spice cabinet. Ordinary dried and chopped spices are among the most realistic materials you can use to simulate plants. They're also easy to obtain. While cooks choose spices for their flavor, usually I pick a spice for appearance only, Fig. 11.

After gluing the tree into its hole with white glue, I applied the assorted ground cover textures I had gathered: chopped dillweed and fine ground foam (for grass), and chopped oregano (again, for dead leaves). I started by spraying the dry soil with flat varnish, then sprinkled on the dillweed and foam. When the "grass" looked good, I sprayed on more varnish and sprinkled on the oregano "leaves," then resprayed lightly with the varnish to fix the oregano in place. After giving the varnish a few minutes to dry I shook off the excess texture material, saving it for future use, Fig. 12.

The small bushes were made from gnarled shrub roots with clumps of com-



Fig. 11. Among the materials used for foliage on the diorama were (left to right) oregano, dillweed, seed heads from tall grass, and commercial green ground foam texture material.



Fig. 12. The scene begins to come to life with the addition of the large dead tree (a hackberry twig) and the post for the German signs. The dead leaves at the side of the road (more oregano leaves) are an easy-to-do touch of realism.

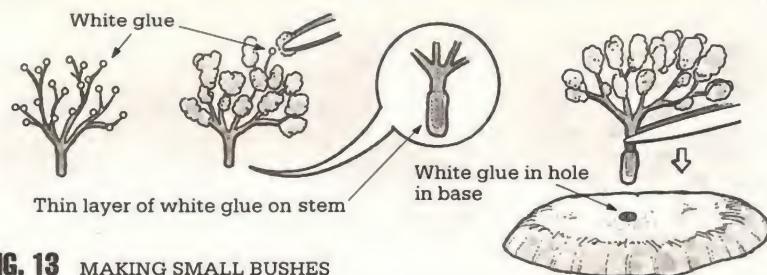


FIG. 13 MAKING SMALL BUSHES

mercial green foam foliage. I added them to the diorama by punching small holes in the Styrofoam base and cementing the stems into the holes with white glue, Fig. 13.

The signpost and signs. All of the signs on the post at the road junction are German, and that's the tip-off that this real estate is "Under New Management." The signpost is a length of



Fig. 15. An afternoon stroll through an overgrown field yielded several varieties of convincing tall grass for 1/35 scale.

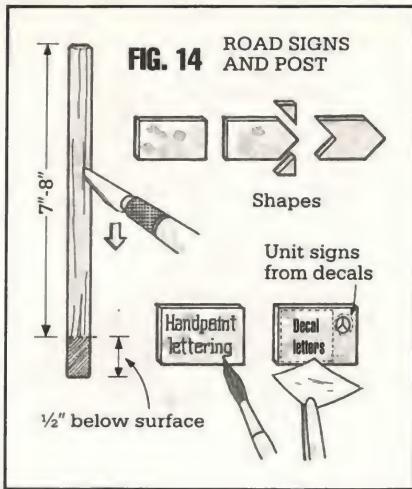
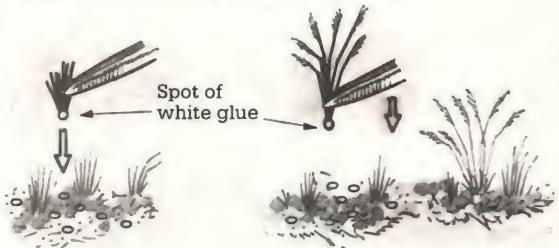
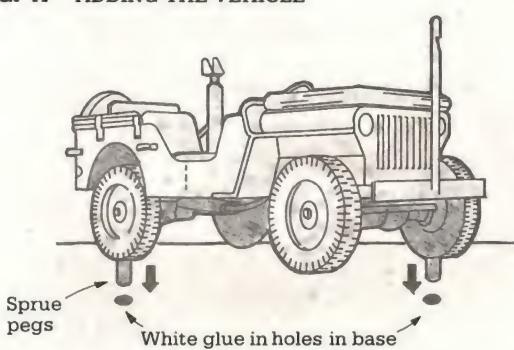


FIG. 16 PLANTING MINIATURE GRASS



FINESCALE MODELER: A. L. Schmidt

FIG. 17 ADDING THE VEHICLE



All the signs on the post are German, but the left-behind helmet and the "at ease" poses of the two GIs are further evidence that the enemy has recently given up this patch of real estate.

FIG. 18 ALTERING THE FIGURE



1/4" dowel that had been outdoors for several months. Its gray, weathered appearance can be simulated by boiling a new dowel in water for an hour, soaking it for another hour to open the grain, scribing in cracks with a knife, and painting the wood with a heavy wash of dark gray, Fig. 14.

The German unit direction signs were hand-painted on shapes cut from 1/32" basswood. Many WWII German signs were stenciled, so you can use decals or dry transfers to make neater printed signs and unit or tactical signs. Be sure to weather the backs of the signs before cementing them to the post.

To finish the base I added several small clumps of tall grass around the signpost, tree trunk, and other places in the scene. Here again I used a natural material, individual strands from the seed heads of tall grass, Fig. 15. Using tweezers, I stripped tufts of the dried weed away from the stem and cemented them in small clumps. Use a small dot of white glue on the base of each clump, Fig. 16.

Completing the scene. After adding a canvas windshield cover and cementing the windshield of the jeep in the lowered position, I cemented 3/32" diameter plastic pegs (made from sprue) to the bottom of the left front and right rear wheels, Fig. 17, then pushed the pegs into holes drilled into the base, cementing them with white glue.

The figures are from the crew of the Tamiya M3A2. Both were converted to fit the story line. The right leg of the seated figure was cut off at the knee and straightened by inserting a wedge of thick sprue, Fig. 18, and the standing figure was built with alternate arms to hold the carbine (from the Italeri jeep kit) and a stretched-sprue cigarette.

I prefer muted colors for uniforms anyway, so the figures were relatively easy to paint. The trousers are brown, field jackets are light olive green, shirts brown, leggings light olive or tan, and web gear khaki (olive) green, and I added just a little shading to accentuate details.

After painting the figures I dusted them with the same sifted dirt used on the diorama base and oversprayed each with flat finish. This dusting helps the figures blend in with the scenic base and look "at home." When the varnish dried, I cemented the figures in place with white glue, adding bits of grass and leaves around the feet of the standing figure. The final touch was the hand-lettered "Reg Stab I" sign on the back of the jeep.

That's all there is to it. While this small vignette really serves only to show off a handful of easy techniques, once you've built one small diorama there are literally thousands of combinations of vehicles, figures, terrain, foliage, and climate you'll be ready to tackle.

FSM

APC HOBBIES

11A FENCE RD
BOX 122
EARLYSVILLE VA 22936

M/C-VISA 804-9732705

VP CANADA 1/72 VACUFORM

EXACT VAC 1/48 A/C	6.95
Polikarpov I-16	6.95
Curtiss P40N	6.95
Yak 3	6.95
Grumman "Duck"	8.75
Me163 B	5.95
MICRO SCALE DECALS 2.25ea.	
1/72, 1/48, 1/32, 1/144.	
ERTL/ESCI 1/72 2.50ea.	
FOKKER D VII	
Se5a	
Nieuport	
Spad	
Sopwith Camel	
Albatross	

TAMIYA 1/35

M-I \$13.50

NEW

POSTAGE 1.50 per order

mail order catalog \$1.00

YOU DESERVE THE GUILLOTINE!

I DID.



Fred Nagel-Miniature Maker

Like many makers of miniatures, I was frustrated by the fact that there was simply no good way to cut wood strips to a perfect length

and angle. My miter box saw would leave splintery edges that needed sanding. A shears would crush my wood. Poor fitting joints were the usual result.

So I invented...La Guillotine.

It works a lot like its name suggests. It's a sturdy tabletop cutting block mounted on a flat platform, about 6 inches long. The platform is imprinted with a protractor precisely labeled from 0 to 60 degrees.

On the platform, there is a moveable arm for locating your wood strip and measuring any length you desire. You simply lay your strip of wood against this arm, dial the angle you want, then hit the cutter block with about the same force you'd use on a desktop staple gun. Instantly you have a perfect, cleanly-cut wood strip that will fit precisely in dollhouses, miniature furniture, model ships, trim, moldings and windows.

The price of La Guillotine is \$28.50. I guarantee your complete satisfaction, or your money will be refunded.

To order La Guillotine, just use the order form below. I'll rush your La Guillotine to you. Then, like me, you will be able to enjoy your hobby all the more.

No Sanding!



LA GUILLOTINE

Bowsprit, Inc., P.O. Box 130, Glencoe, Ill. 60022

Please send me La Guillotine. I've enclosed a check or money order made out to Bowsprit, Inc. I understand that my satisfaction is guaranteed or my money will be refunded. Thank you.

Name _____

Address _____

City _____ State _____ Zip Code _____

Patent Pending

Quantity	Description	Price	Total
	La Guillotine	\$28.50	
	Pkg. 5 Replacement Blades	1.90	
		Total	
	Shipping & Handling (choose one)	UPS \$1.50	
		P.O. Box or Canada \$3.50	
		Total Amount Enclosed	



**THE
OFFICIAL MONOGRAM
PAINTING GUIDE TO GERMAN
AIRCRAFT 1935-1945**

by K.A. Merrick & T.H. Hitchcock

\$39.95

plus \$2.25 shipping

Cited as the standard guide for WWII Luftwaffe aircraft by the National Air and Space Museum.

This book contains more than 200 rare photos with more than 50 in full color many never seen before. Dozens of high detail schematic camouflage charts. Also there are 126 genuine lacquer paint chips (each measuring 2 x 2 inches) precisely matched to original samples. Each sturdy page is removable and is contained in a locking heavy-duty vinyl three ring binder with full color laminated covers.



**JET PLANES
OF THE THIRD REICH**

By J.R. Smith & E.J. Creek

TO BE RELEASED
11/30/82

- ★ Large 9 x 12" Hardcover
- ★ 400 Pages
- ★ 500 Photographs
- ★ 260 Line Drawings
- ★ 5 Lbs. Net Weight
- ★ 33 Color Drawings
- ★ 40 Color Photographs
- ★ 8 Color Paintings

\$69.95

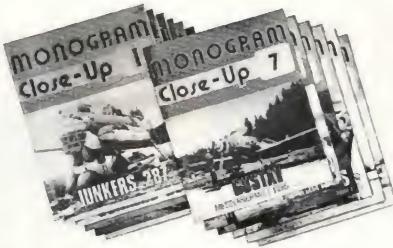
shipping
prepaid

NEW!

**JET PLANES
OF THE THIRD REICH**

By J.R. Smith & E.J. Creek

The authors cover all the jets which were actually built, plus others which came too late to be completed. Besides the well known Messerschmitt 262 and Arado 234, these include the He 178, the world's first jet; the He 280, the world's first jet fighter; the Ju 287, the world's first four engined jet bomber; the Go 229, the world's first jet flying wing; the He 162 "People's fighter," the last hope of the Third Reich; the He 343 and Ta 183 advanced projects; as well as numerous other fascinating aircraft. Nor have the authors forgotten the jet engines. A whole chapter is devoted to the various powerplants.



MONOGRAM CLOSE-UPS

*The finest series of its kind in print!
Each issue contains scores of
rare photos plus exceptional
drawings and detailed information.*

1. JUNKERS 287	7. GUSTAV—Bf 109G pt.2
2. JUNKERS 288	13. AICHI M6A1 SEIRAN
3. JUNKERS 290	14. Japanese Cockpits—pt.1
4. BUZZ BOMB	15. Japanese Cockpits—pt.2
5. TAIFUN—Bf 108	16. Bf 109 K
6. GUSTAV—Bf 109G	19. KIKKA—Japan's First Jet

\$5.95 each plus \$1.00 shipping

Watch our ad for new issues!

Free catalog on request.

MAIL YOUR ORDER TO:
MONOGRAM AVIATION PUBLICATIONS
625 EDGEBROOK DRIVE DEPT. 800
BOYLSTON, MASSACHUSETTS 01505, USA

A Major Manufacturer Wants To Hear From You!

In planning for new releases over the next 48 months, a major manufacturer has asked us to conduct a survey to find out the wants, interests, and kit preferences of plastic modelers. Your honest, accurate answers to the following will go a long way toward determining the Kits of Tomorrow!

Please indicate the category and scale you prefer to work in:

Aircraft

Ships

Armor

Cars/Trucks

What kits, and in what scale, would you like to see in the next 24 months?

1. _____
2. _____
3. _____
4. _____
5. _____

6. _____
7. _____
8. _____
9. _____
10. _____

What comments do you have regarding kit improvements, new lines, etc.

BACKGROUND

AGE

YEARS MODELING

AVERAGE # KITS
BOUGHT PER MONTH

OPTIONAL

Your responses will be included in this survey regardless of whether you put down your name and address. However, the manufacturer has informed us that a limited number of respondents will be contacted for additional comments and in-depth input toward new releases. Your name and address will enable you to be eligible for contact by the manufacturer.

NAME _____

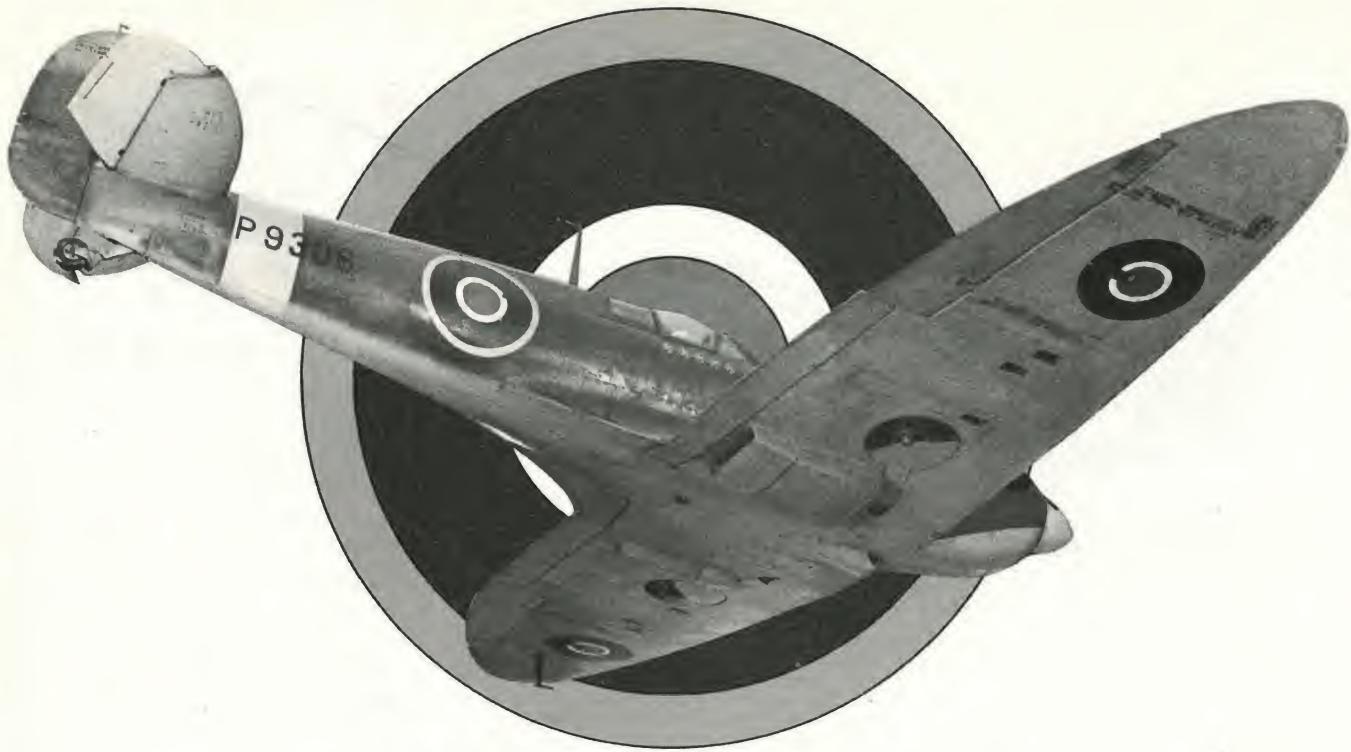
ADDRESS _____

CITY _____ STATE _____ ZIP _____

TELEPHONE NO. _____

Please Mail To:

Squadron Mail Order, Dept. SC
1115 Crowley Drive
Carrollton, Texas 75011-5010



Research data: SUPERMARINE SPITFIRE MK. IA P9306

Color schemes and markings for a Battle of Britain warbird from manufacturer to museum

BY KEN SOMMERFIELD
ARTWORK BY THE AUTHOR

ON SEPTEMBER 19, 1944, British Information Services presented a Spitfire Mk. IA to the Museum of Science and Industry in Chicago, Illinois, and the plane has been on display there ever since. The museum's Spitfire had survived four years of active duty in the Royal Air Force and had undergone every major markings change that affected RAF day fighters during World War Two: It had worn seven sets of markings. I envisioned painting a series of airbrushed watercolor renderings of the Spitfire Mk. IA, each slightly different from the others, but all with one common marking — the black serial number P9306. The paintings would provide reference data for a collection of seven models representing the entire history of P9306. What an interesting conversation piece that would make!

The plane today. The plane, as I found it in the museum, carries the

standard day fighter scheme of Dark Green/Ocean Grey/Medium Sea Grey that was authorized after August 15, 1941. The national insignia have been retained, but there are no unit markings. There are, however, five German kill marks along the starboard side of the cockpit; I hoped to trace the origin of each. This, then, represents the final color scheme worn by P9306. Now I had to find out what the others were.

Research. Information about Spitfire color schemes proved to be readily available. For example, the book *Camouflage and Markings: R. A. F. Fighter Command, Northern Europe, 1936 to 1945* gives a concise description of all Spitfire markings throughout WWII. *British Aviation Colours of World War Two*, a collection of Air Ministry orders about markings and color schemes, was also helpful.

My next job was to find out what the

plane's unit markings were, those that were applied at squadron level. This is where the job got tough! Time and circumstance have ways of making records disappear, and in the case of Spitfire P9306, many details were never recorded in the first place.

Neither I nor any of those who helped with this project found any wartime photos of P9306, though we did find photos of several aircraft belonging to the same units that P9306 was assigned to. These photos provided information about the size and position of the code letters on the museum aircraft. I obtained two-letter squadron codes from the book *Squadron Codes, 1937-56*, but the third letter, the aircraft letter assigned to each plane in a squadron, was apparently never recorded for P9306 in any of its four unit assignments. For this reason, none of the paintings except Fig. 6 shows an air-



Both photos, Chicago Museum of Science and Industry

The Spitfire Mk. IA in the Chicago Museum of Science and Industry was a gift from the people of Great Britain. Ken's research into its past took more than a year but provided him with enough information to paint ten airbrushed watercolor renderings that show the plane at each stage of its career with the RAF.

craft letter on the fuselage. In Fig. 6, the letter "H" shows the position the letter would occupy. There is no evidence that any personal markings or emblems were ever applied to P9306.

Next I tried to learn the history of those kill marks. For this, I relied upon the assistance of a true gentleman, Wing Commander F. F. Lambert, DSO, DFC, CD (R), who visited the Public Record Office in London and searched through the Operations Record Books for both combat units that P9306 had been assigned to. He then cross-checked the dates of combat activity listed in the Operations Record Books with the combat descriptions written up in the separate volumes of Combat Reports. After months of work, Wing Cdr. Lambert and I knew the exact dates of the first two of the five kills and the most likely period of the other three.

Before describing the operational his-

tory and markings of P9306, I'd like to mention that I contacted several organizations when I started to research this aircraft. Of course, I began with the Museum of Science and Industry, but I also wrote to the Royal Air Force Museum, the Imperial War Museum, the Ministry of Defence, and the Public Record Office, all in London. Each letter was answered cordially and each correspondent gave as much information as he could. No single agency had everything I needed to complete the project. Here is a point worth remembering if you plan to do similar research: Allow plenty of time. I had hoped to research P9306 in three or four months — the project took more than a year!

P9306's early career. Despite nagging gaps in its history, I salvaged enough information to piece together P9306's past. The plane was built by



Meet Ken Sommerfield

Ken Sommerfield attended the Chicago Academy of Fine Arts and is now a free-lance commercial artist in Princeton, Illinois. He's married and has one son. At 43, Ken has been building scale model aircraft for about 15 years; his models show the same attention to detail that is so evident in his illustrations. He belongs to the Experimental Aircraft Association and has made paintings of several fellow members' airplanes. He's also interested in photography, which he uses as a tool when researching aircraft.

For assistance in preparing this article, Ken thanks all of the institutions mentioned in the text and offers special thanks to F. F. Lambert, J. S. Fowler, E. A. Munday, and D. M. Greenwood.

Vickers-Armstrongs at the Woolston Works late in 1939 and was one of 35 aircraft in Serial Batch P9305-9339. The RAF received the fighter on January 20, 1940, and sent it two days later to reserve storage at No. 24 Maintenance Unit (MU). Over the next five months, P9306 was subsequently transferred to No. 4 MU and No. 6 MU. Finally, it was assigned to active duty on July 6, 1940, and joined 74 Squadron at Hornchurch. Upon arrival, its factory-applied fuselage roundels (35", Type B) were obsolete for service aircraft, and were changed to the 35" Type A.1 roundel with the 7" red spot, Figs. 1, 2, 3, and 4.

Also, the fin flash of 7"-wide stripes was added, as were the squadron codes, done in letters 24" high, 16" wide, with 4"-wide strokes. The codes were painted a light gray conforming to reference DTD 33B/157. The undersurface color had to be changed also, but it's unlikely that this was done right away as the maintenance shops were busy replacing all de Havilland two-speed props with the constant-speed type. Also, 74 Squadron was in the midst of the Battle of Britain, and P9306 was quickly put to work; four days after it arrived, it was flown by Pilot Officer Stevenson who shot down one Messerschmitt Bf 109 and damaged another.

It can be assumed that by the end of July the plane's underside was correctly painted all Sky. The upper sur-



Fig. 1. Production color scheme for upper surfaces, Dark Green/Dark Earth. Pattern A. Type B roundels of 56" diameter.

ALL DRAWINGS 1/48 SCALE

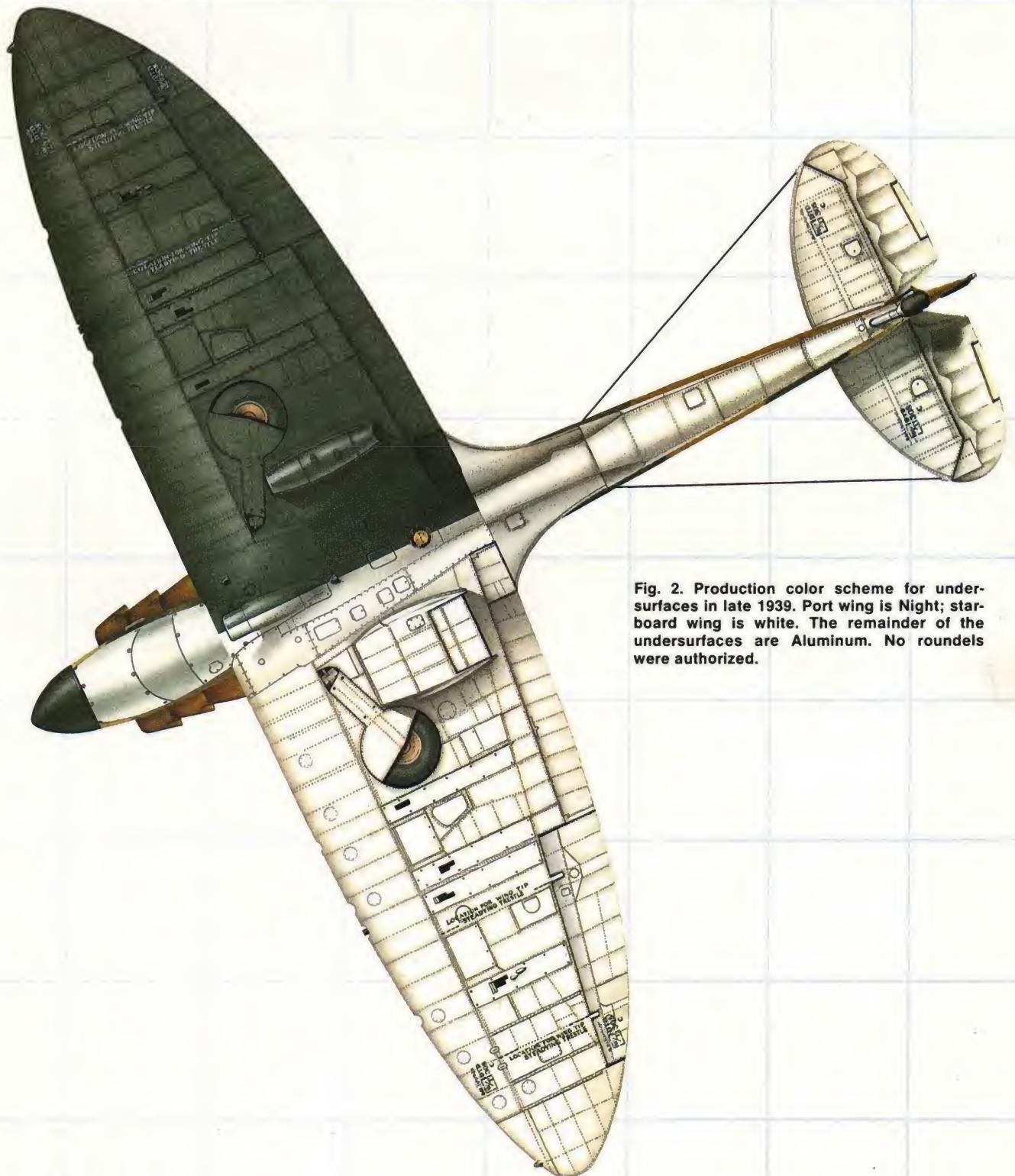


Fig. 2. Production color scheme for under-surfaces in late 1939. Port wing is Night; starboard wing is white. The remainder of the undersurfaces are Aluminum. No roundels were authorized.



Figs. 3 and 4. Side views showing the position and sizes of the serial number and Type B roundels of 35" diameter. No other markings were applied at this time except for the maintenance stenciling common to all aircraft.



face colors of Dark Green/Dark Earth (Pattern A) remained as the factory had applied them, Fig. 5. No under-wing roundels were applied until after August 11, 1940, and then they were Type A, 50" diameter. The fin flash required an alteration as of August 1; it became three 8" stripes 27" high. A second kill mark, Fig. 6, was added on August 11 when Sergeant Kirk destroyed a Messerschmitt Bf 110 36 miles east of Harwich at 4,000 feet.

There were no changes in markings during September and October. Although the fighter was frequently engaged in combat interceptions, no kills were recorded. On September 20, 1940, records indicate that P9306 incurred damage requiring it to be sent to 45 MU for repairs. The nature of the damage is not known, nor is it known how long the plane was out of action.

At the end of November 1940, another change in markings took place, Fig. 7, when the spinner was painted Sky, as was an 18"-wide fuselage band. The underside of the port wing was

painted Night up to the fuselage center line and the underwing roundel on that side was encircled with a 5"-wide yellow band. (The band was not painted on the aileron.) This scheme was used until April 22, 1941, at which time the black wing was again repainted Sky. Judging from the activities of 74 Squadron through the closing months of 1940, it is possible that P9306 scored its final three kills during November and December — the squadron accounted for 26 enemy aircraft in November, and 12 more in December.

In early 1941, 74 Squadron's combat activities took on an offensive nature and were carried out with newer Mk. IIs; P9306 and other Mk. Is were fast becoming obsolete as first-line weapons. On July 17, 1941, P9306 was transferred to 131 Squadron then forming up at Ouston. With this reassignment came a change in fuselage letter codes from ZP to NX. All other markings remained the same, and it is certain that P9306 now carried five kill marks. The fighter saw no combat during its short

stay with 131 Squadron, but served as a training aircraft for new pilots joining the unit. Records indicate that many of them were Belgian.

A major color scheme change took place while P9306 was with 131 Squadron. After August 15, 1941, the day fighter camouflage changed to Dark Green/Ocean Grey on top, and Medium Sea Grey undersides. The fuselage codes remained 24" high but were now Sky. On the leading edge of each wing was a 4"-wide yellow identification stripe that ran from mid-wing to wing tip. In the process of repainting, the color patterns changed slightly from what they had been when green and brown, and the boundary between upper and lower fuselage colors behind the wing became a soft edge rather than a hard line, Fig. 8.

With the Operational Training Units. On October 22, 1941, P9306 was once again transferred, this time to 52 Operational Training Unit (OTU) at Aston Down. Its chances for combat were slim but it wore another set of letter codes, GK, 24" high. Even though the OTUs



Fig. 5. Appearance at the end of July 1940. Type A.1 roundels of 35" diameter with 7" red centers. Fin flash was three stripes, each 7" wide. Gray squadron code letters 24" high, 16" wide with 4" strokes, and a 2" separation between letters. The kill mark was approximately 3" square. Red tapes were applied over gun ports to keep out dust and prevent gun malfunction. All Sky undersides.



Fig. 6. Appearance at the end of August 1940. Fin flash altered to three 8"-wide stripes 27" high. Type A roundels of 50" diameter had been added to both Sky underwings. A second kill mark has been applied.

were essentially noncombat units, and much larger than normal fighter squadrons, they did have an on-call status and were expected to go into combat if needed. So, the aircraft in OTUs looked like those of the regular day fighter squadrons.

While with 52 OTU, the Spitfire underwent another markings change on May 21, 1942, involving the fuselage and wing roundels and the fin flash. The fin flash became two stripes each 11" wide by 24" high separated by a white stripe 2" wide by 24" high. The fuselage roundels changed to Type C.1, 36" in diameter, and the underwing roundels were Type C, 32" diameter. The upper wing roundels' dimensions were unchanged, but their red center spots were darkened from the previous somewhat bright red to a muted, brick red. This new dull red was also used in the other roundels and the fin flash. These revised national markings would stay with the plane for the rest of its active duty, Fig. 9.

Little is known of the plane's activities while with 52 OTU, but in March

1943, it was again damaged to the extent that it was shipped to Westland Aircraft for repair. As with the first accident, the records do not indicate the type of the damage nor the cause of it, but the aircraft, as it now appears in the museum, shows signs of having been repaired in the fuselage beneath the cockpit door and in the adjoining wing fillet panels. In addition, the fuselage fuel tank cover forward of the windshield appears to have been badly ripped, then welded shut and painted over. Finally, the exhaust manifolds have been replaced by the fishtail type that was more common to the Mk. V Spitfire. Apparently, after the repairs P9306 was transferred again, on May 4, 1943, this time to 61 OTU, Fig. 10.

With the Maintenance Units. With only a change of unit letter codes, the aging fighter experienced its last markings variation. In January 1944, P9306 was withdrawn from active duty and sent first to No. 29 Maintenance Unit, then on to No. 52 MU at Cardiff, Wales. At this last storage facility it was allo-

cated to the museum on August 26, 1944, and arrived in Chicago September 19.

P9306's importance to me. When viewing the plane in the museum, it's easy to pass it off as just another anonymous warbird, one in a parade of planes that were frequently destroyed within days of being built. Yes, they were expendable. But this one survived. It was there when the Heinkel He 111s made their runs across the English Channel. It struck fear in the hearts of rear gunners trapped in outclassed Bf 110s. It was flown by such names as Malan, Mungo-Park, Stevenson, and Brzezina. It was not the personal aircraft of any one pilot, but was kept ready for any pilot on call when the order to scramble was given — in the summer of 1940, that happened a lot!

In the course of tracing the history of this aircraft, I've developed a certain kinship with P9306. It has been part of the enjoyment that I've gotten out of this project, and it has helped to ease the frustration that set in when I could not unearth all the misplaced or unre-



Fig. 7. Appearance at the end of November 1940. Port wing underside painted Night up to fuselage center line (see Fig. 2). Spinner was now Sky, as is an 18"-wide band around the rear fuselage. The underwing roundel has been outlined with a 5" yellow band giving the roundel an overall diameter of 60". The yellow band, however, did not extend into the aileron.

corded details about the plane. I hope that modelers will have as much fun using this reference material as I had gathering it!

FSM

REFERENCES

• Goulding, James, and Robert Jones, *Camouflage and Markings, R. A. F. Fighter Command, Northern Europe, 1936 to 1945*, Doubleday, Garden City, New York, 1971.

- Moss, Peter W., *Supermarine Spitfire*, Ducimus Books, Ltd., London.
- Moyes, Philip J. R., *Supermarine Spitfire I & II*, Vintage Aviation Publications, Ltd., Oxford, 1977.
- Price, Alfred, *Spitfire at War*, Charles Scribner's Sons, New York, 1979.
- Rawlings, John D. R., *Fighter Squadrons of the Royal Air Force*, MacDonald, London, 1976.
- Rawlings, John D. R., and Michael J. F. Bowyer, *Squadron Codes, 1937-56*, Patrick Stephens, Cambridge, 1979.
- Scutts, Jerry, *Spitfire in Action*, Squadron/Signal Publications, Inc., Carrollton, Texas, 1980.
- Sweetman, Bill, *Supermarine Spitfire*, Jane's Publishing Incorporated, New York, 1980.
- Tanner, John (ed.), *British Aviation Colours of World War Two*, Hippocrene Books, Inc., New York, 1976.



Fig. 10. Appearance in May 1943. Except for a change in unit letter codes, all markings remained as in Fig. 9. Fishtail exhaust manifolds had been installed. Repaired and painted panels and generally scruffy appearance indicate that the plane had encountered recent hard use.

Fig. 9. Appearance after May 21, 1942. Fuselage roundels changed to Type C.1 of 36" diameter. Underwing roundels were now Type C, 32" diameter, and the upper wing roundels remained unchanged except that the red centers were dulled to a brick red. The brick red is used in all other red markings, including the fin flash, which was now two stripes 11" wide separated by a white stripe 2" wide by 24" high.



Fig. 8. Appearance after August 15, 1941. Upper surface camouflage was now Dark Green/Ocean Grey with Medium Sea Grey underneath. The division between upper and lower colors along the rear fuselage was now a soft edge rather than a hard line. Letter codes remained 24" x 16" but were now Sky along with the spinner and fuselage band. The wing leading edges showed yellow identification stripes 4" wide running from midway along the wing outboard to the tips.



MICRO SCALE DECALS

Are you ready for Realism?

Microscale developed the largest selection of model decals because of our desire to make the best decals. Add the world famous Microscale Finishing System and you have the reason why Microscale is preferred by professionals for museum quality models—the Microscale System will work for you too!



New Microscale Decals are released every month. See them at your hobby dealer!

Send for your copy of our new illustrated catalog #81A
\$1.00 pp



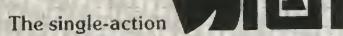
MICROSCALE
DIV.
KRASEL INDUSTRIES, INC.
1821 E. Newport Circle, Santa Ana, CA 92705

Great airbrushing is for the birds. The Binks birds.

The Raven and Wren will do just about anything an artist or craftsperson will want to do. And, do it easier.

That's because they're precision engineered for great performance. And because they're made with the finest materials available. (We even made them to be serviced in the field, by you.)

They're strong, versatile, and reliable... the only airbrushes you'll ever need.



The Raven airbrush...for photo retouchers, artists, animators, architects, and fine model builders.

The Wren airbrush...for hobbyists, background work, auto refinishers, and general industry. A great choice for your first airbrush.



Binks offers complete airbrush outfits, air compressors, oil and water traps, air regulators, hose, canned propellant, and more. For more information on our complete line, write for brochure A59-12 FS.

Binks Manufacturing Company
9201 W. Belmont Ave., Franklin Park, IL 60131

BINKS

Binks is a registered trademark of Binks Manufacturing Company.

1/200th, 1/72nd or 1/48th, there's always
something new from
MINICRAFT/HASEGAWA



The
A-10A
THUNDER-
BOLT II
and the
F-15C
EAGLE in
1/72nd scale,
the C.H.P.
HUGHES 500D
in 1/48th scale
and the BOEING
727-200 in
1/200th scale all share one unique
feature — in each case, the soon to
be released kit is
the very finest ever
produced. Because
we specialize in
aircraft kits, we are
dedicated to producing
the most accurate and
highly detailed models
available. There is a
reason why MINICRAFT/
HASEGAWA kits win so
many trophies in model
competition around the
world — it's the built-in
quality that makes the
difference.

Send \$2.00 for our twenty page full color catalog
describing and illustrating the entire MINICRAFT/
HASEGAWA line of scale model kits.
P.O. Box 3577, Torrance, CA 90510

MINICRAFT
Co. **Hasegawa**

AUGMENTABLES in PLASTIC by Grandt Line

HINGES • NUTS, BOLTS • QUEENPOSTS
EYEBOLTS • RODDING • TURNBUCKLES
SHIP GRATING

Send 50¢ and SSAE for Augmentables Flyer
1040 B SHARY CT, CONCORD, CA 94518



KCC is a bi-monthly publication of ads and info on collectable plastic kits and related items. Pictures of rare kit box art and early news of new and re-issued kits are included. Send \$1.00 for current issue and subscription information.

JOHN W. BURNS • 3213 HARDY DR. • EDMOND, OKLA. 73034

**HOBBY SHOPS
ARE THE BACKBONE
OF THE
MODEL INDUSTRY**
*Visit your favorite
shop often!*

ATTENTION PLASTIC MODEL BUILDERS



Makes Plastic Cement
a Thing of The Past!

\$1.50

One Drop Welds a Seam, FAST!
50 CENTS Postage and Handling
DEALER INQUIRIES WELCOME

SEND NOW!

R.H. HEBNER DIST. \$2.00 Enclosed
P.O. Box AH Dept 1
Spencerport, N.Y. 14559

NAME _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

FSM BOOK BRIEFS

BY BURR ANGLE



Air War over Southeast Asia, a Pictorial Record, Vol. 1, 1962-1966

Author and artist Lou Drendel plans to publish three volumes documenting the activities of U. S. Army, Air Force, Marines, and Navy (with some coverage of VNAF) aircraft in Vietnam. His first volume covers the period from the introduction of American advisers through the massive buildup of the mid-1960s. It is an 80-page, 8½" x 11", soft-cover book containing 212 black-and-white photos, 9 color photos, and 18 color paintings. The text is limited to a few pages of historical background—the volume is primarily a photo scrapbook compiled by a keen student of the Vietnam War and its aircraft. In addition to photos of fighter, bomber, ground-support, reconnaissance, and transport aircraft, there are many pictures of air and ground crews, munitions, and support equipment, all of which provide useful reference material.

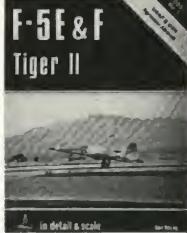
The book is published by Squadron/Signal Publications, 1115 Crowley Drive, Carrollton, TX 75006, and sells for \$8.95.



F-16 Fighting Falcon in Action

Lou Drendel has written and illustrated this 50-page, 8½" x 11", horizontal format, soft-cover book about the General Dynamics F-16. The book contains 92 black-and-white photos, 7 color paintings, and many drawings of aircraft details. In addition to a brief report on the fighter's development and production history, Drendel includes an interview with General Dynamics' Director of Flight Test, Phil Oestricher, and his own account of a flight in the rear seat of an F-16B.

The book is published by Squadron/Signal Publications; it sells for \$4.95.



F-5E & F Tiger II in Detail & Scale

The most recent of Bert Kinzey's *Detail & Scale* books, this 72-page, 8½" x 11", soft-cover volume concentrates on the F-5E and F versions of the Northrop lightweight fighter, especially the planes flown by U. S. Air Force aggressor pilots in simulated combat with Air Force fighters. The book contains 136 black-and-white photos, 35 color photos, 1/72 scale five-view drawings, and many sketches of aircraft details. A modeler's section provides kit and decal reviews.

The price is \$6.95; enclose \$1.00 for postage and handling if the book is ordered directly from Aero Publishers, Inc., 329 West Aviation Road, Fallbrook, CA 92028.



SB2C Helldiver in Action

The Curtiss SB2C Helldiver had a troubled development but eventually became a mainstay of U. S. Navy carrier dive bombing units in WWII; a few remained in service with the French into the 1950s. This 50-page, 8½" x 11", horizontal format, soft-cover book by Robert Stern with illustrations by Don Greer contains 118 black-and-white photos, 10 color paintings, and many detail drawings that show Helldivers from the first prototype XSB2C-1 through the SB2C-5E, with brief mention of the XSB2C-6 and the XSB3C-1.

It is published by Squadron/Signal Publications and sells for \$4.95.

Photography for the Scalemodeller

First published in Australia in 1975 and reprinted in 1978 by Drake Publishers, Inc., 801 Second Avenue, New York, NY 10017, this is a 79-page, 7½" x 10½", hard-cover book with 95 black-and-white photos and 18 drawings. The price is \$8.95.

The author, Pieter Stroethoff, is a commercial photographer and builder of plastic scale models, particularly aircraft. After a brief introduction to the philosophy of scale model photography, he discusses the best types of cameras, filters, and films, and shows

how to mount models on sheets of plate glass or in front of mirrors to achieve special effects. Although the author also discusses larger cameras, his photos make it clear that an inexpensive 35 mm SLR usually works well — careful posing of the model and control of the lighting are more important than fancy equipment.

How to Build, Customize & Design Plastic Models

This is a 182-page, 5 1/8" x 8 1/4", soft-cover book (\$10.95) from Tab Books, Inc., Blue Ridge Summit, PA 17214, by Theron L. Gordon with 121 black-and-white photos (many poorly focused) and 2 drawings. It is meant to be a beginner's guide to building plastic models. However, the text is infuriatingly vague. For example, we're told that a knife is a "Very basic tool, used constantly. The heavy duty knife is used strictly for cutting thick plastic, such as cutting a part in half. The medium duty knife is used in removing parts from trees and some carving. The light duty knife is used for shaping and trimming just about any tight, low-pressure work." There are no photos of the knives being discussed nor any mention of brand names. We're also told that "there are two main brands of plastic model glue, Pactra and Testors."

Six Armies in Normandy

This is a 365-page, 6" x 9", hard-cover book with 43 photos and 8 maps by John Keegan, a lecturer at the Royal Military Academy at Sandhurst. Keegan first briefly discusses Allied planning for the invasion of Normandy on June 6, 1944, as well as German defensive preparations. Later chapters cover the paratroop landings of the U. S. 82nd and 101st Airborne Divisions, the Canadian assault at Juno Beach, German defenses and counterattacks, the battle for Caen, the activities of General Maczek's Polish 1st Armoured Division in the Battle of the Falaise Pocket, and the role of Charles de Gaulle and French resistance units in the liberation of Paris.

The combat descriptions are excellent, especially those concerning actions by individual soldiers and small units: Many could provide subjects for interesting dioramas.

The book is published by the Viking Press, 625 Madison Avenue, New York, NY 10022; the price is \$17.95.

The Fiberglass Repair & Construction Handbook

Modelbuilders frequently use polyester and epoxy resins as adhesives and fillers and large models are often made with fiberglass laminates, so any publication that provides information on how to use these materials is welcome. This 216-page, 7 3/4" x 9 1/4", soft-cover book by Jack Wiley includes 220 illustra-

AIRCRAFT

ARMOR

BIG DISCOUNTS

Diorama Accessories Our Specialty

We stock all the usual Name-Brand Kits and many unusual Diorama Accessories, Supplies, and Imported Reference Books.

Specialized modeling supplies.

MODELER'S DISCOUNT HOBBY SHOP

P.O. Box 105, Dept. FS, East Rochester, New York 14445

\$1.00 for our new catalog will be refunded on your first order.

D & J HOBBY

Located in

San Francisco-San Jose area



D & J Hobby & Crafts
96 San Tomas Aquino Road
Campbell, CA 95008
Ph. (408) 379-1696

COME IN AND VISIT OUR NEW LARGER STORE

WE CARRY
COMPLETE
LINES OF:

We have no
catalog, but we
do sell mail
order. Send SSAE
for your specific
inquiries.

- ★ Imported Aircraft, Ships and Armor Kits
- ★ Fantasy Miniatures & Games
- ★ Minitanks & GHQ Micro Armor
- ★ Humbrol—Polly S—Floquil
- ★ Paasche Airbrushes & Parts
- ★ Scratchbuilding Supplies
- ★ Wargames and Miniatures
- ★ Decals, Magazines and Books

Open: Mon-Thurs-Fri 10:30-9 Tues-Wed 10:30-6 Sat 10-5:30 Sun 12-5:30

Waldron
Model
Products

1358 Stephen Way
San Jose Ca. 95128
(408) 252-7422



1/32nd F-16 MODEL

NEW — F-16 cockpit placards in 1/32nd & 1/48th scales. An extensive set in 1/32nd scale will include new metal panels to replace those removed from kit parts. C.R.T. panel & annunciator block panel also included. 1/32nd scale. Set \$10.15 ea. 1/48th set \$7.75

JOIN
I.P.M.S.
NOW



1/32nd F-16 MODEL

COMING SOON! F-14 Cockpit Placard Kit. Will be very similar in makeup to F-16 Cockpit Placard Kit. Also available soon a super small punch & die set that will enable the model builder to replace or make new the many knobs in a modern aircraft cockpit. This punch will also be a great help in doing many other super detailing jobs. Send \$.50 for a flyer listing all of our super detailing items. Add 10% of order, postage & handling. For fastest return include postal money order. Foreign orders add 15% of order. International money order or check drawn on U.S. bank for U.S. funds. Calif. residents add 6.5% state tax.

NOTE: We also have the Grumman F6F Hellcat, the F4 Phantom & the F-104 Starfighter Cockpit Placards in process as well as special jet seat belt hardware. Introduction Dates & Prices to be announced.

DEALER INQUIRIES INVITED

WEAPONS and WARFARE QUARTERLY

For the serious historian, modeler, collector, wargamer; covers every aspect of Weapons & Warfare—every nation, period, subject (much emphasis on WWII and Viet Nam). Over 100 8½" x 11" pages per issue; dozens of in-depth articles, book & product reviews, news, etc.; photos, art, scale drawings, camouflage and markings schemes, and much more packed into every issue. Cover price is \$5.00; 1 yr. \$20.00—order a subscription from this ad and receive a FREE gift bonus! (Prices are \$6.00 per copy, \$24.00 per yr. outside U.S.) Or send SASE for more info and our complete catalog of other publications and services.

W&WQ, 218-F1 Beech, Bennington VT 05201



tions; it provides an excellent introduction to working with fiberglass for new construction and for repairs. Tools, materials, safe working practices, mold making, and laminating techniques are covered thoroughly. The how-to chapters include simple practice projects to help the reader become familiar with such techniques as laying up fiberglass laminates with epoxy or polyester resins. A glossary and a list of suppliers' addresses make the book even more useful.

It is published by Tab Books, Inc.; the price is \$10.95.

CUSH
FACT,
FICTION,
& FANTASY
MAIL ORDER
MINIATURE
FIGURES (Connoisseur)
• Historex • Series 77 • Barton
• Chota Sahib • Imrie/Risley • Ceremonial
PLUS MANY MORE!
CATALOG UPDATES EVERY 4-6 WEEKS
Send \$2 for Illustrated Catalog:
CUSH, 6525 West Bluemound Rd.,
Milwaukee, WI 53213, (414) 258-6006



P-51 Mustang in Color

Author Larry Davis and artist Don Greer have collaborated to produce this 30-page, 8½" x 11", soft-cover book with 46 black-and-white photos, 7 color photos, and 14 pages of color paintings containing four-view renderings, color schemes, and detail parts on the P-51A, P-51B, and P-51D. Two pages of color paintings show F-82 details and color schemes.

The book is published by Squadron/Signal Publications and sells for \$5.95.



The Complete Book of Cockpits

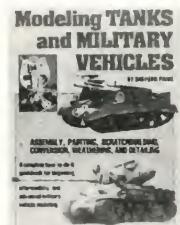
Don Dwiggins' latest volume from Tab Books, Inc., is a 232-page, 8½" x 11", hard-cover book containing 360 black-and-white photos, 23 color photos, and 19 drawings. It sells for \$39.95. The text discusses the history of aircraft instrumentation, while most of the photos are close-up shots of cockpit interiors. American homebuilt and general aviation aircraft are covered in the

most detail, though many U. S. commercial and military airplanes of all eras are treated as well, and there are even two color photos each of a Messerschmitt Bf 109G cockpit and an Me 262 cockpit. The result is a fascinating, loosely organized compendium of text and photos by an author who loves the subject. The book should be especially valuable to those who superdetail model aircraft cockpits and should be invaluable to those who model contemporary U. S. homebuilts — where else could you find a photo of the instrument panel on the Cook JC-1 Challenger?



Museum and Display Aircraft of the United States

This soft-cover, 8½" x 11", 76-page book by Bruce William Orriss is a list of all aircraft known to be held by museums in the United States. The names and addresses of museums owning one or more aircraft are given, as is a description of each plane's condition and display status. An index of aircraft is included and 206 black-and-white photos of planes of all eras add to the interest. Published in 1976, it is available for \$4.95 from the American Aviation Historical Society, P. O. Box 99, Garden Grove, CA 92642.



Modeling Tanks and Military Vehicles

This 76-page, 8½" x 11¼", soft-cover book by Shepherd Paine tells how to build armor models. There are 226 photos (19 in color) and 49 drawings.

Shep first discusses basic kit assembly and painting and then progresses to kit conversions, weathering, detailing, and scratchbuilding. Three step-by-step chapters present four modeling projects: two easy kit conversions involving truck-mounted guns, converting an M4 Sherman into an Israeli Isherman, and building a U. S. M25 tank transporter.

The book is published by Kalmbach Publishing Co., 1027 North Seventh Street, Milwaukee, WI 53233; the price is \$8.95 plus \$.75 for postage and handling (\$1.25 for foreign orders).

SCALE MODEL RESEARCH

A Photo In Hand Is Worth Two In A Book!

Over 425 Foto Paaks in stock with new ones added each month.

Each Foto Paak contains high quality, detailed color photographs of aircraft (old and new), helicopters, engines and sailplanes on postcard size prints. Enlargements up to 8" x 12" available for scale documentation books. Most, but not all, Foto-Paaks have a matching scale 3 view which is sent upon request gratis. Start your SCALE MINIATURE AIRCRAFT with accurate and comprehensive data from a specialized source. Send for FOTO PAAK LISTING TODAY!

ALSO THE AMERICAN SOURCE FOR KOKU-FAN SCALE 3 VIEW DRAWINGS

A Slice Of Aviation History
FOTO PAAK LISTING \$1.00
P.O. Box 685,
Orange, CA 92666



Become a charter subscriber to FINE SCALE MODELER — the quality scale modeling magazine!

8 issues: \$15 (\$19 outside the U. S.)

The LADY BE GOOD**The Lady Be Good**

In this reprint of the 1962 edition, Dennis E. McClendon re-creates the history of an Air Corps B-24D (serial No. 41-24301) that disappeared on April 4, 1943, during its first combat mission. The plane had taken off from Soluch, Libya, for a bombing raid on Naples and was scheduled to return that evening. No trace of the plane was found until November 9, 1958, when a British oil geologist sighted a B-24 in the Libyan desert 440 miles south of Soluch. McClendon tells how the plane was identified as the *Lady Be Good*, why its inexperienced crew mistakenly flew so far beyond their base, and how the remains of eight of the nine crewmen were eventually found as far as 60 miles from the wreckage.

Although there are no drawings, this 208-page, 5 1/2" x 8 1/4", hard-cover book (12 pages of photos) should be useful to any modeler interested in building a diorama of the *Lady Be Good*.

It is published by Aero Publishers, Inc., 329 Aviation Road, Fallbrook, CA 92028; the price is \$13.95. **FSM**

STATEMENT OF OWNERSHIP, MANAGEMENT, AND CIRCULATION
(Required by 39 U.S.C. 3685)

1. Title of publication: FINE SCALE MODELER.
2. Date of filing: September 30, 1982.
3. Frequency of issue: Quarterly.
- 3A. No. of issues published annually: 4.
- 3B. Annual subscription price: \$7.50.
4. Location of known office of publication: 1027 N. 7th St., Milwaukee, Milwaukee County, WI 53233.
5. Location of the headquarters or general business offices of the publishers: Same.
6. Publisher: James J. King, 1027 N. 7th St., Milwaukee, WI 53233; Editor, Bob Hayden, 1027 N. 7th St., Milwaukee, WI 53233; Managing Editor, none.
7. Owner: Kalmbach Publishing Co., 1027 N. 7th St., Milwaukee, WI 53233; stockholders owning or holding 1 percent or more of total amount of stock are: William A. Akin Jr., 1027 N. 7th St., Milwaukee, WI 53233; William B. Calhoun Jr., South Tahoe Ranch Rd., Allens Park, CO 80510; Drayton Cochran, 120 Broadway, New York, NY 10005; Elizabeth K. Grunden, 10926 Leaning Ash Ln., Houston, TX 77079; Alexander L. H. Darragh, Rt. 8, Box 95, Harrison, AR 72601; George A. Gloff, 1027 N. 7th St., Milwaukee, WI 53233; George F. Hirschmann, 835 Glendale Dr., Glenview, IL 60025; Linda H. Hanson, 614 S. Grove, Barrington, IL 60010; Dr. H. W. Hein, 2549 S. Kinziekinnic Ave., Milwaukee, WI 53207; Margaret Jenkins, 2434 N. 102nd St., Wauwatosa, WI 53226; Charles A. Kalmbach, 7435 N. Bruebun Ln., Glendale, WI 53209; William H. Kalmbach, 2409 Paramount, Austin, TX 78704; James J. King, 1027 N. 7th St., Milwaukee, WI 53233; Kathryn Mahnke, 10006 La Plata Dr., Rancho Cordova, CA 95670; Ray J. Mertz, 2462 N. Prospect Ave., Milwaukee, WI 53211; David P. Morgan, 1027 N. 7th St., Milwaukee, WI 53233; Walter J. Mundschau, 1027 N. 7th St., Milwaukee, WI 53233; Norma Thornburgh, 5530 80th St., N., St. Petersburg, FL 33709.
8. Known bondholders, mortgages, and other security holders owning or holding 1 percent or more of total amount of bonds, mortgages or other securities: Estate of A. C. Kalmbach, 1027 N. 7th St., Milwaukee, WI 53233.
9. For completion by nonprofit organizations authorized to mail at special rates: Section 411.3, DMM only.
10. Extent and nature of circulation:

Average no. copies each issue during preceding 12 months	Actual number of copies of single issues published nearest to filing date
36,700	50,207

- A. Total no. of copies printed (net press run): 36,700
- B. Paid circulation: 22,400
1. Sales through dealers and carriers, street vendors and counter sales: 19,734
2. Mail subscription: 2,052
- C. Total paid circulation (sum of 10B1 and 10B2): 21,786
- D. Free distribution by mail, carrier or other means: samples, complimentary, and other free copies: 129
- E. Total distribution (sum of C and D): 21,915
- F. Copies not distributed: 1. Office use, left over, unaccounted, spoiled after printing: 2,474
2. Returns from news agents: 12,311
- G. Total (sum of E, F1, and 2 — should equal net press run shown in A): 36,700
- H. Net press run shown in A1: 50,207

11. I certify that the statements made by me above are correct and complete.

Larry R. Driscoll, Business Manager

Become a charter subscriber to
FINE SCALE MODELER — the quality
scale modeling magazine!

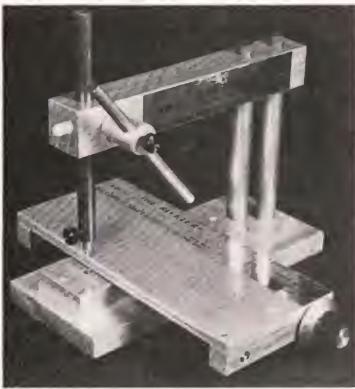
8 issues: \$15 (\$19 outside the U. S.)

DISCOUNTED

Gaming supplies. Free list SASE.

New Jersey Hobbies
24-hour telephone service
201-495-0110

P.O. Box 322
Port Monmouth, NJ 07758

PUTS 'EM TOGETHER, TAKES 'EM APART**PULL, PRESS, PUNCH & EMBOSSED**

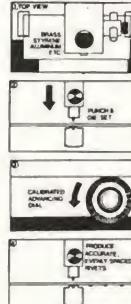
Sensipress shown with Riveter attachment

THE SENSIPRESS

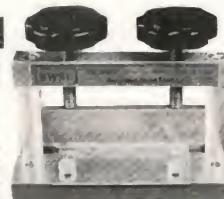
THE SENSIPRESS+: A Sensitive Arbour Press—Use It For Removing Gears, Assembling Wheels, Punch & Die Work.

Small Enough To Give That Delicate Touch Needed For Working With Fine Models—Yet Sturdy Enough To Apply All The Pressure You Need. Up To 250 lbs. 50-4 \$64.95

Complete Line Of Accessories Available

RIVET EMBOSsing
MADE EASY!**THE RIVETER**

THE RIVETER+: This Attachment (Shown Here With The Sensipress+) Turns The Sensipress+ Into A Precision Rivet Embosser Working As A Calibrated Advancing Table. Produce Accurate, Evenly Spaced Rows Of Rivets. 51-4 \$34.95

**THE BENDER**

THE BENDER: A Miniature Press Brake Designed To Bend Brass (Up To 0.02 Thick) Or Other Light Material Up To 90° On Pieces Up To 3" Wide. Can Also Be Used On Styrene. Adjustable Stop & Optional Urethane Die Included.

48-4 \$24.95

SEND A LARGE SSAE FOR OUR TOOL CATALOG

NorthWest Short Line
BOX 423 SEATTLE, WASHINGTON 98111

1930's AMERICAN DIMESTORE SOLDIERS
&
"LEAD FIGURES"

Manufactured from the Original Old Factory Molds
"Delightful Reminders of Years Gone By"



3 1/4" Tall full figures, Hollow Cast in a special white metal lead alloy. Also military vehicles, Autos, Trucks, Racers, Christmas figures, tents and repair parts. Over 100 items manufactured and sold direct to Modelers & Collectors.

Visit our Show Room:

7325 Broadway

North Bergen, N.J.

Hrs: 1:30-6 pm Tues thru Fri.
1:30-5 pm Sat & by appointment

(201) 861-2979



Mail Orders:

Send \$1.00 for 8 pg. Catalog to:
VINTAGE CASTINGS, INC.
(Dept. 7) 127 - 74th St.
North Bergen, N.J. 07047



NEW!



1:48 – Heinkel He51-A1/B1 – \$9.95



1:72 – Beriev BE-4 (KOR-2) – \$7.95



1:72 – Sukhoi SU-5 – \$6.95

COMING!



1:72 – Nakajima E8N1/2 DAVE

1:72 – Mitsubishi Ki-30 ANN

1:48 – Ilyushin IL-2 SHTURMOVIK

1:48 – Ilyushin IL-2m3 SHTURMOVIK

STILL AVAILABLE!

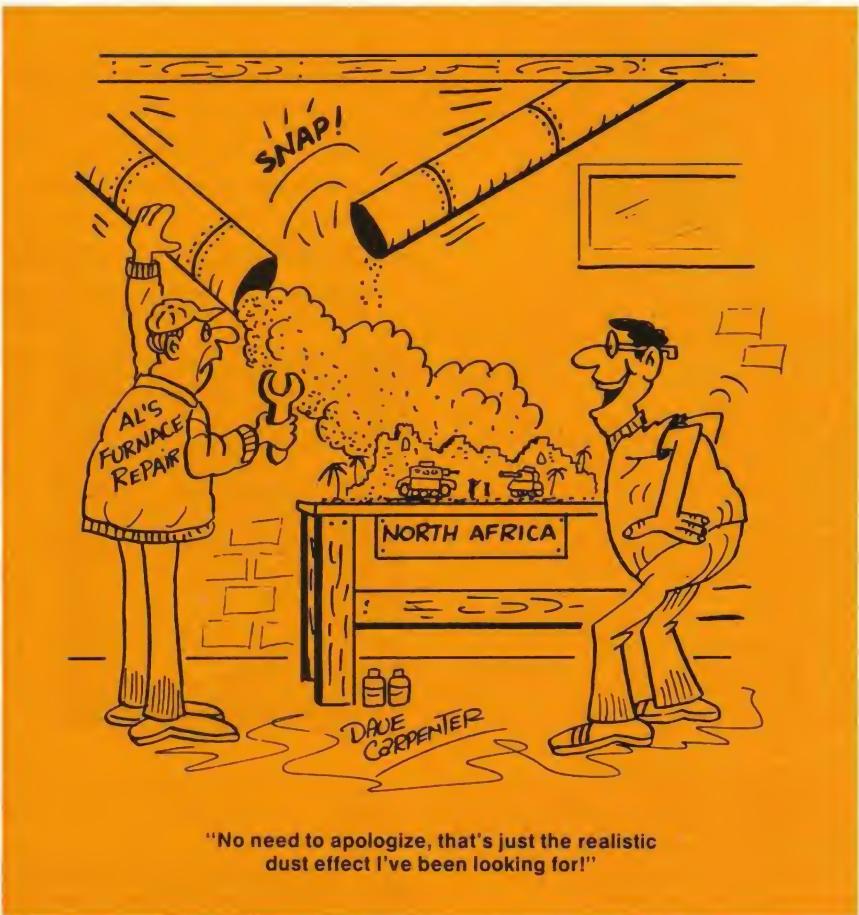
1:72 – Arado AR 68E	– \$ 5.95
1:72 – Blohm and Voss HA 137	– 5.95
1:72 – Gotha GO 145	– 5.95
1:72 – Kawasaki Ki-10 PERRY	– 5.95
1:72 – Flugtechnische FFG 227	– 6.95
1:72 – Heinkel HE-46 C/D	– 6.95
1:72 – Meridionali IMAM Ro. 57	– 6.95
1:72 – Tachikawa Ki-36/Ki-55 IDA	– 6.95
1:72 – Kyushu Q1W L'ORNA	– 7.95
1:48 – BU 131 JUNGMANN	– 7.95
1:48 – Mikoyan-Gurevich MiG-3	– 9.95
1:48 – SB2U VINDICATOR	– 12.95
1:48 – Aichi B7A GRACE	– 13.95
1:48 – Nakajima B6N JILL	– 13.95

Shipping & Handling – Domestic: Under \$20, add 15%; over \$20, no charge. Foreign: Surface, add 20%; Air, add 50% – any excess will be credited. **NO FOREIGN CURRENCY** – U.S. FUNDS ONLY. Michigan residents add 4% sales tax. We reserve the right to select shipping method: United Parcel Service or U.S. Parcel Post. If First Class delivery desired, add \$1.00 extra.

Payment – Cash, check, or preferably money order. No C.O.D. or credit card sales.

DEALER INQUIRIES INVITED.

Wings 72 & Wings 48, Inc.
3349 Wildridge Drive, N.E.
Grand Rapids, Michigan 49505



BADGER... *Tools to help you finish like a pro.*

The BADGER Model 200 IL is the perfect tool for finishing scale models. You can blend, shade and stipple... achieve special effects such as camouflage, smoke, fire and weather damage, etc.

BADGER'S Foto/Frisket Film is ideal for pre-cut stencils and masks. It can be used on most surfaces that are to be painted thus preventing underspray. Great for camouflage techniques. Available in sheets and rolls.

BADGER'S Fluid Filter is designed for use with air-brushes that use jars or bottles. The microscreen filter eliminates lumpy paint or foreign particles that normally pass through the air-brush and cause plugging. The Fluid Filter slides on and off easily for quick cleaning.

You'll find these tips and much more in BADGER'S Hobby and Craft Guide to Air-Brushing.

Ask for BADGER products at your local hobby, craft or art store or write Dept. 855 for Catalog BA300. Please enclose \$1.00 to cover cost of postage and handling.

Prices slightly higher in Canada.

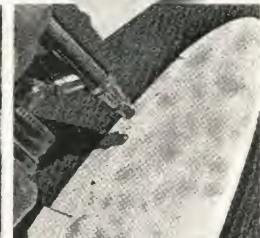
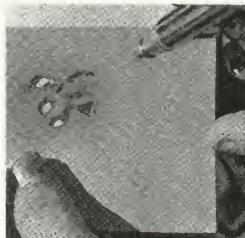


BADGER AIR-BRUSH CO. 9128 Belmont Ave. • Franklin Park, Ill. 60131

Dist. in Canada by: HOBBY INDUSTRIES • 24 Ronson Drive • Rexdale, Ontario M9W 1B4



Two camouflage tips are shown here:



1. Using a mask as shown, spray through the openings, move the mask over the next area to be sprayed. Hold the mask at least 1/2" from surface for a soft edge effect.

2. Another way to achieve the mottled effect is by free-hand spraying. Set the spray width to fine and hold the air-brush close to the surface using tight, erratic hand motions.

© BACo. 1981

A new book by Sheperd Paine!



MODELING TANKS AND MILITARY VEHICLES

MODELING TANKS AND MILITARY VEHICLES is a superb new book for scale modelers written by Sheperd Paine, master modeler and author of the acclaimed title, HOW TO BUILD DIORAMAS.

In the 76 pages of MODELING TANKS AND MILITARY VEHICLES, Paine shows you how to build accurate, realistic armor models that you'll be proud of. Whether you're a beginner or a veteran modelbuilder, MODELING TANKS AND MILITARY VEHICLES will increase your modeling enjoyment and improve your modelbuilding skills. With well-written how-to-do-it instructions, 228 razor-sharp photos, and 57 detailed drawings, MODELING TANKS AND MILITARY VEHICLES covers basic modeling techniques such as kit assembly and painting, then progresses to kit conversions, weathering, detailing, and even scratchbuilding! Paine concentrates on the popular 1/35 scale in this book, but his extraordinary modeling tips can be applied to all scales!

Purchase a copy of MODELING TANKS AND MILITARY VEHICLES at your favorite hobby shop, \$8.95, or use the coupon at the right to order direct today!

Modeling TANKS and MILITARY VEHICLES

BY SHEPERD Paine



ASSEMBLY, PAINTING, SCRATCHBUILDING, CONVERSION, WEATHERING, AND DETAILING

A complete how-to-do-it guidebook for beginning,

intermediate, and advanced military vehicle modeling.



TABLE OF CONTENTS

1. Basic kit assembly	6. Step-by-step: Two easy kit conversions	9. Step-by-step: The Super Sherman
2. Painting armor models	7. Detailing and superdetailing	10. Battle damage
3. Weathering	8. Modeling extra gear and equipment	11. Building from scratch
4. Reference and research		12. Step-by-step: An M25 tank transporter
5. Conversion and scratchbuilding techniques		

DEPT. 4253

KALMBACH  **BOOKS**

1027 N. Seventh St., Milwaukee, WI 53233

Enclosed is \$ for copies of MODELING TANKS AND MILITARY VEHICLES at \$8.95. Include for postage and handling: U. S. \$.75, foreign, \$1.25. Wisconsin residents add 5 per cent sales tax.

NAME

STREET

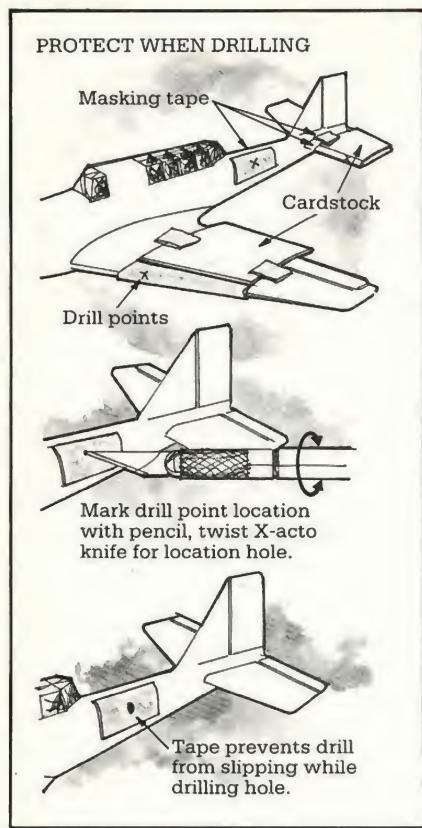
CHARGE TO: MASTERCARD VISA EXP. DATE

CITY

CARD NUMBER

STATE, ZIP

SIGNATURE



Protect surfaces when drilling. When installing wheels, struts, antennas, machine guns, and similar parts on a nearly completed model, be careful to prevent damage when drilling their mounting holes. The drawing shows what I do. First, I tape thin sections of cardboard (cereal box thickness) to all parts of the model that could be damaged by a slipped drill. Next, I apply pieces of masking tape directly over the hole locations. I mark the hole locations with a soft lead pencil and then carefully twist the tip of an X-acto blade into each marked location. Twisting the blade makes a pinpoint-size hole in the tape that serves as a drill guide, so that the drill can't slip.

Applying the cardboard and tape does take some effort, but I'd rather do the job right the first time than have to spend even more time repairing and repainting damaged sections of the model.

E. Richard Staszak

Lead foil. Make straps for tanks and trucks from pieces of the thin lead foil used to cover corks on wine bottles. The foil can be cut with scissors and rolled to any thickness desired; it's much easier to paint and handle than paper.

Jim Gillen

Colored translucent plastic for wing tip lights. Makit & Bakit styrene beads (as described in the Fall 1982 FSM) can be used to create translucent wing tip and formation lights for model aircraft in any scale. I make a rectangular mold about 1" x 4" x 1/4" deep from a double layer of aluminum foil, pour in the colored beads, and bake in the oven at 325° for 25 to 30 minutes. After cooling, the result is a colored translucent sheet of plastic that can be shaped with a knife, saw, file, or sandpaper.

After cutting a mounting hole into the wing, I glue the light in place with Krazy Glue and file and sand it flush with the wing's surface. The light can then be polished out with toothpaste and masked for painting. The results are quite eye-catching.

Phil Hays

Metallic markers. I have found something in my local art store that has turned out to be quite a help in finishing my model cars. It's called a metallic marker. The markers are made by Niji and Pilot, come in silver, gold, and copper, and broad or fine points. The ink is permanent. They cost about \$2.50.

I use the markers to highlight small chrome trim on my model cars and

Which is the only modeling magazine in world to give its readers a free decal sheet?

Yes, Scale Aircraft Modelling provides its readers with a superb aircraft decal sheet every other issue linked with one of the lead articles. Apart from that it has the best camouflage and markings drawings, detailed histories and plenty of how-to-do-it information and up-to-date reviews of the latest kits, decals and accessories. It's a must for all aircraft modelers. Check your local store or take out an annual subscription, now!

SCALE AIRCRAFT MODELLING
226 HIGH STREET,
BERKHAMSTED, HERTS,
HP4 1AD, ENGLAND
or from Bill Dean Books Ltd., 166-41
Powells Cove Boulevard, Whitestone,
New York 11357



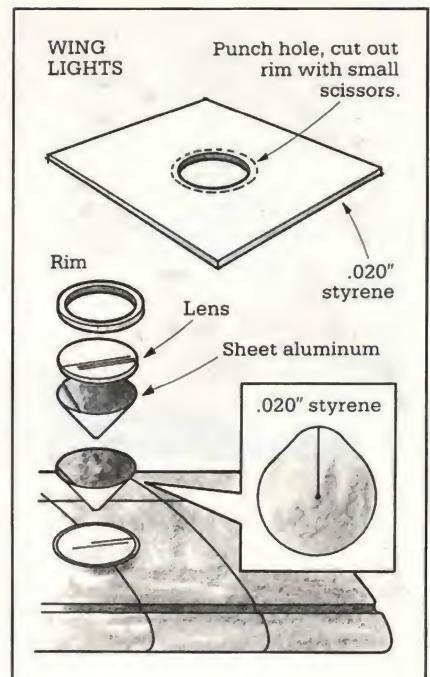
Extra-large sandpaper. In the Fall 1982 FSM, Alan C. Griffith asked where he could buy sheets of sandpaper larger than 9" x 11". If he checks the Yellow Pages under "Abrasives," he'll find that he can purchase just about any size and grit of paper or cloth that he needs. For example, here in North Long Beach, California, a company makes sanding belts and sells any length you want. You cut to individual requirements. *Wayne A. Denny*

Wing lights. Here's a handy way to make realistic wing lights with reflectors. You'll need a single-hole paper punch, small scissors, scrap .020" styrene sheet, clear acetate, aluminum sheet cut from a disposable pie pan or frozen food container, 5-minute epoxy, and liquid plastic cement.

Step 1. Use the paper punch to make a hole in the .020" styrene, then cut around the edge of the hole to form the rim.

Step 2. Make a receptacle by cutting out an egg-shaped piece of .020" styrene slightly larger than the rim. Make a single cut from the narrow end to the center. Shape the piece into a cone and glue the overlapping edges with liquid plastic cement. Sand the top of the cone until it fits snugly against the rim.

Step 3. Make a reflector by repeating step 2, but this time use unwrinkled



aluminum sheet from a disposable pie pan or frozen food container. (Ordinary aluminum foil is too flimsy.) Attach the reflector to the receptacle with a drop of 5-minute epoxy.

Step 4. Punch a lens from clear acetate and glue it to the rim with 5-minute epoxy.

Ron Lowry

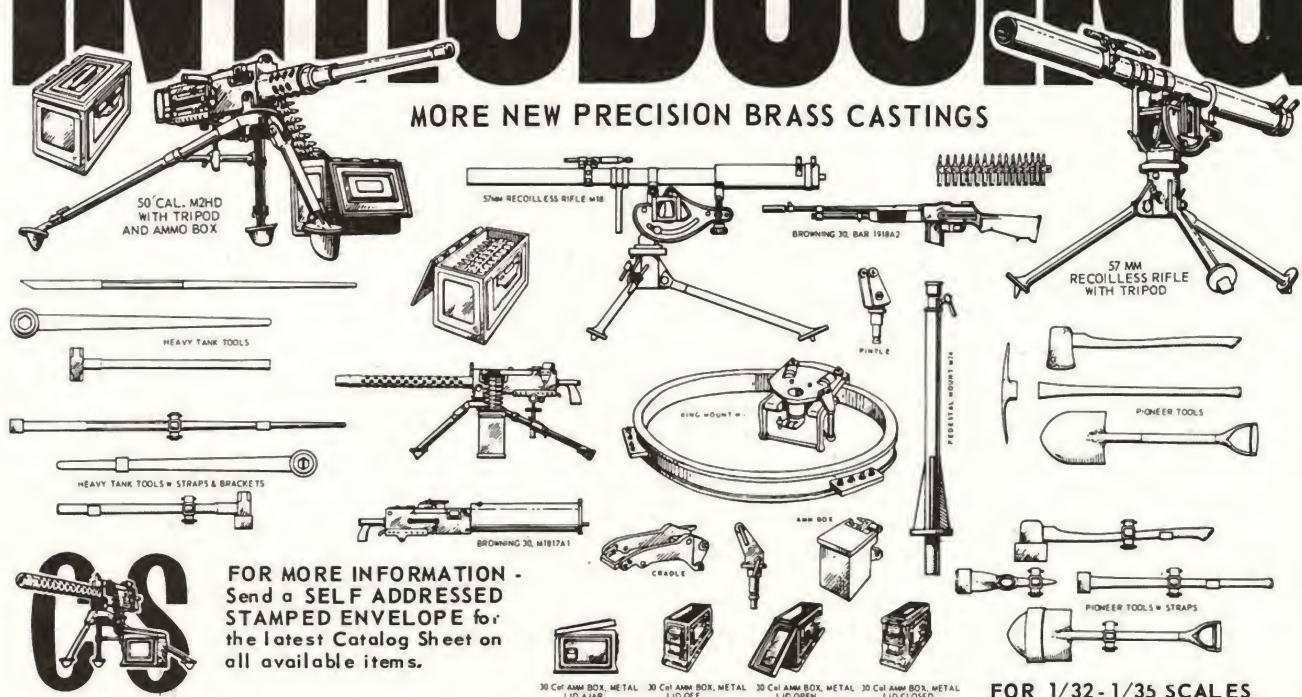
trucks; they're much neater than brushes.

As far as the metallic quality of the ink, it falls somewhere between the silver paints I use and Bare Metal Foil.

Brian O'Leary

INTRODUCING

MORE NEW PRECISION BRASS CASTINGS



FOR MORE INFORMATION -
Send a SELF ADDRESSED
STAMPED ENVELOPE for
the latest Catalog Sheet on
all available items.



COMBAT SERIES

Dept. F, P.O. BOX 475 PINEDALE, CALIFORNIA 93650

FOR 1/32-1/35 SCALES



PAINT SPRAY BOOTH

Model PB-500

Approximate inside dimensions (front)—11" high, 26" wide, 16" deep (tapers to rear)

Blower—140 CFM squirrel cage with 6' cord and plug

Filter system—1" x 10" x 20" fiberglass air conditioning filter, external filter bag. (Must be vented to outside if odor is objectionable. Filters will remove only paint particles.)

Construction—Molded, one piece fiberglass, rubber feet, trim strip and aluminum filter retainer. White finish inside.

Weight—Approximately 13 lbs.

Price—\$150.00 plus \$9.75 handling and shipping charges.

Trial run—50 units available. Prices subject to change without notice.

PRECISION MANUFACTURING CO.

4546 Sinclair Rd., San Antonio, TX 78222

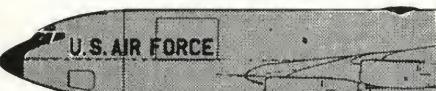
When writing to advertisers and manufacturers, please tell them you learned about their products in FINE SCALE MODELER

NOVA MODELS

REOWNED FOR
QUALITY
COMPLETENESS
ACCURACY

FOR OTHER AND FORTHCOMING NOVA KITS, SEE OUR NEW 1982/83 CATALOG.

NOW AVAILABLE! LOCKHEED C-141B stretched "STARLIFTER". 1/72 scale vacuform kit. Kit has full cockpit and interior detail (ramp and rear doors may be opened). Wing molded in one piece tip-to-tip. 44 sq.in. of Microscale decals, metal main and nose gear struts make this the biggest and most complete kit yet from NOVA MODELS at \$27.00. Over 28 inches long!



- Boeing KC-135 'Stratotanker' @ \$21.50



- Lockheed C-141A 'Starlifter' @ \$27.00

Other outstanding NOVA MODELS available:
1/72 scale vacuform kits.

- Republic F-105G conversion @ \$5.50
- Tupolev Tu-22 'Blinder' @ \$19.00



- Avro Vulcan B.2 @ \$21.50



The Spray-on Metal Finish for use in any airbrush.

Available in the following Metal shades:

- Shade 1 Aluminum o Shade 2 Steel
- Shade 3 Titanium o Shade 4 Exhaust
- Shade 5 Bronze o Shade 6 Magnesium
- Shade 7 Gold o Shade 8 Gunmetal

All at \$1.65 each.

- Sealer @ \$1.40 to seal all shades.
- Gloss and Matt @ \$1.40, for use over paint.
- Instructions for use of Liqu-A-Plate...50¢
- Dayglo Orange.....\$1.65
- Dayglo Red.....\$1.65
- Liqu-A-Plate Sampler Set containing:
One each of shades 1 thru 8, Sealer, Gloss, Matt, plus one extra bottle of Shade 1, plus instructions.
All for \$17.50 + \$2.50 post.

SUTCLIFFE (CONTRAIL) 1/72 scale vacuform kits from England. We are the exclusive U.S.A. agent for this fine line of extremely well produced vacuform kits. Many highly unusual British aircraft of between-the-wars are featured, including the world's most extensive range of flying boat kits. All biplane kits include plastic injection-molded wing and landing gear struts. Most kits also include injection-molded wheels, propellers and engines, plus high quality decal sheets.

- Dealer enquiries invited for LIQU-A-PLATE, NOVA MODELS, SUTCLIFFE, AIRVAC, AIRFRAME.

ARCHER'S SM 82/83

MAIL ORDER

CATALOG \$3.50

(Mailed First Class)

Overseas (airmail)

\$4.00

HOURS: Mon-Fri. 9-5. Closed Sat/Sun.

- Phone orders on VISA or Mastercard
- Calif. residents ADD 6% sales tax.
- Postage: \$10 to \$15.00.....\$2.00
\$15.00 and up.....\$3.50
- Orders by Parcel Post additional \$1.00

FOREIGN ORDERS (Incl. Canada and Mexico) add 20%. Excess postage will be credited. Min. foreign postage \$5.00.

No C.O.D.'s

- MINIMUM ORDER \$10.00

2200-2 Bell X-1E (with decal) \$5.99



DEPT. FSM 82/3
18320 WARD STREET
FOUNTAIN VALLEY, CA. 92708
714-962-4833

2947
'BUFFETTE'
NAIL BUFFER
REVLON

Keeps nail surface smooth. Makes nails glossier, healthier-looking.



Nail buffer. I've found that a chamois nail buffer is well suited to several modeling tasks. It is a good scratch remover on unpainted plastic, even on clear parts, and is much less messy than a polish. Another application is to give a flat finish a worn, weathered sheen. Light buffing will give a shiny, almost oily appearance to flat paints. This is very effective on the hoods of armored vehicles, the upper surfaces of aircraft, and even the helmets of miniature figures. Areas around raised details stay flat and thus stand out. This also works well on instrument panels first painted white, then black, and buffed to bring out the raised white dials.

Dave Orloff

Loss prevention. Place sprue trees containing small parts inside a plastic sandwich or food storage bag and cut through the bag to remove the parts from the sprue. The bag allows you to see the parts being trimmed, but prevents the pieces from flying across the room and hiding in the carpet.

If you must work in a room with shag carpeting, spread newspaper over the carpet so that you'll at least have a chance of finding dropped parts.

Bruce Culver

Watercolor tray. A watercolor tray with several small compartments is useful for sorting and storing small parts during assembly.

Bruce Culver

THE
Spare Time
SHOP

We Have All This...

- ARMOR • AIRCRAFT
- AUTOMOBILES • SHIPS
- ROCKETRY
- SPACE • SCI. FI.
- WARGAMING
- MINIATURES

ALL SCALES • ALL MAKES

DOMESTIC AND IMPORTED

THERE ARE OVER 3,500 PLASTIC MODELS ON THE MARKET TODAY
WE HAVE EVERY ONE THAT IS NOW AVAILABLE SEE FOR YOURSELF!
DROP BY

\$3.00

for our new catalog
call (617) 481-5786 with
C.O.D. accepted

The Spare Time Shop

222 E. Main St. Marlboro MA 01752

WE PAY
THE PAY
IN THE
USA



"Get Your Kit Together"

IPMS/USA

By Modelers — For Modelers

International Plastic Modelers Society

4 Quarterly and 6 Updates all on
Plastic Modeling.

For Samples Send \$2.75 To:

IPMS/USA
P.O. BOX 480 S
DENVER, COLORADO 80201

**MODELING
WITH A
DISTINCTIVE
DIFFERENCE**

The distinctive line of models imported by EMPIRE PACIFIC LTD. marks the return of quality models for people seeking quality at a sensible price. The fine craftsmanship of our imported models matches the promise of quality you seek. Check with your favorite hobby dealer today about our many distinctive models. **NICHIMO MC2026 1/20 US JEEP CJ-7**



EMPIRE PACIFIC LTD. imports the following distinctive lines for your modeling pleasure.

NICHIMO
NITTO
AOSHIMA
KAWAI

ARII
TOKYO SHARP
UNION
CROWN

TOKYO MARUI
JOE WORKS
SANGO
YAMADA

EMPIRE PACIFIC LTD.

18027 CLARKDALE AVE.
ARTESIA, CA 90701

BETTER MODELS FOR BETTER MODELING

FALCON

INDUSTRIES

VACUFORMS

DISTRIBUTED BY

WAR EAGLE

• INCORPORATED •

P.O. Box 255 • New Baltimore, Michigan 48047

SUPPORT

IPMS



• FALCON Ta 152H by DAVE BOKSANSKI

FALCON vacuform kits are now available in the US by UPS directly from

WAR EAGLE
• INCORPORATED •

SUPPORT

IPMS

NEW

(1/48) Lavochkin La-5	\$12.95
(1/48) Focke-Wulf Ta 152H	\$12.95
(1/48) Seafire FR.47	\$12.95
(1/48) Martin Baker M.B.5	\$12.95
(1/48) Be2c	\$12.95
(1/32) Fokker D VIII	\$12.95
	(1/72) TRIPLE conversion
	\$12.95
	(F-100F • TA-7C • RF-8)
(1/48) Hawker "Sea Fury"	— COMING —
	(1/48) Northrop F-89 "Scorpion"

CHECK or MONEY ORDER ONLY

All CONTINENTAL US orders shipped UPS POSTPAID

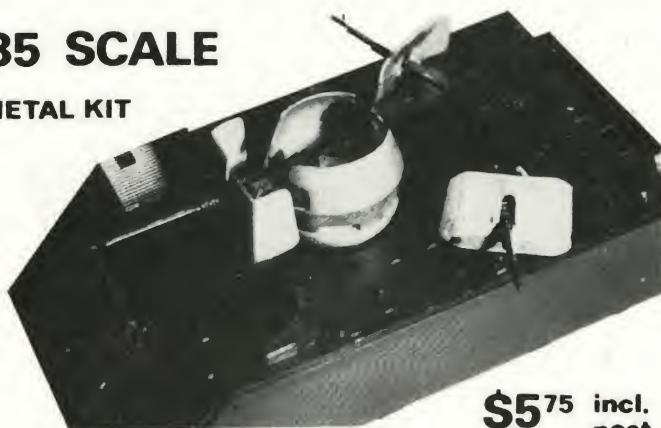
WAR EAGLE, Inc. is the SOLE NORTH AMERICAN DISTRIBUTOR for FALCON PRODUCTS

DEALER INQUIRIES INVITED

ACAV SHIELDS

1:35 SCALE

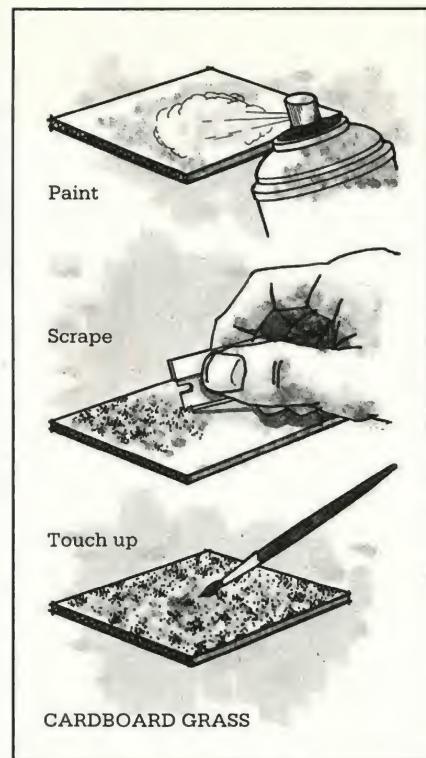
METAL KIT

\$5⁷⁵ incl.
post**BATTLE LINE**
miniatures

ALSO AVAILABLE:

16 VIET NAM COMBAT FIGURES - 1:35 SCALE
USA USMC VC NVA - ILL. CATALOG \$1.50

Send check/m.o. to:

GATEWAY HOBBIES INC.62 W 38 ST
N.Y.C., N.Y., 10018

CARDBOARD GRASS

Cardboard grass. Need grass on a diorama? Try cardboard. First cut the cardboard to size. Next paint it a base color (or colors if you want to include patches of dead grass). Now lightly scrape and tease the surface of the cardboard with the tip of a sharp razor blade: This will raise the cardboard fibers, creating many tiny blades of grass. Finally, touch up the grass with a brush.

Practice on a piece of scrap and you'll soon get the hang of it. The grass is perfect for 1/48 to 1/32 scale, and although the work is painstaking, I find it rewarding.

Troy Borgerson

Extra-thin plywood. If you need thin sections of fine-grained wood for interior paneling in a diorama structure and require greater strength than a veneer can provide, consider $1/64$ " birch aircraft plywood. It's made from three paper-thin plies bonded with a waterproof adhesive and can be cut with ordinary scissors. It accepts all hobby stains, paints, and clear finishes.

You'll probably find the plywood in sizes up to 12" x 48" in the model aviation section of your hobby shop (flying model enthusiasts use it to cover foam plastic wing cores); if not, try Sig Manufacturing Co., Inc., 401 South Front Street, Montezuma, IA 50171.

Burr Angle

Would you like to share information on a useful tool or technique with other FSM readers? Send a brief description of the tool or technique and a black-and-white photo or a pencil sketch to **FSM Tips**, FINESCALE MODELER, 1027 North Seventh Street, Milwaukee, WI 53233. Please enclose a stamped, self-addressed envelope.

CLASSIFIED ADVERTISEMENTS

PLEASE FURNISH STREET ADDRESS FOR FSM'S PRIVATE RECORDS WHEN USING A P.O. BOX NUMBER IN YOUR AD

This section is open to anyone who wants to sell or buy scale modeling merchandise.

RATE: 20¢ per word. **MINIMUM charge is \$2.40.** Count ALL initials, single numbers, groups of numbers (i.e., AFV or B-24), name, address number, street number, city, state, phone numbers each as one word. Zip code is free. Payment should be made in advance.

CLOSING DATE: Fall issue closes July 15.

FOR SALE

Brookhurst Hobbies, 12741 Brookhurst Way, Garden Grove, CA 92640 has military kits from around the world! Plastic armor, aircraft, wargames, books, paints, tools. Mail order sent anywhere. Catalog, \$2.50.

We have the latest plastic military and automobile kit releases in stock. Mail order is a specialty with us. Also books, decals, paints, magazines, and more. Write or call, Ted's Engine House, 6307 Westfield, Pennsauken, NJ 08110. (609) 662-0222.

Heller 1982 color catalog, New, including the Constellation and Paris bus. 63 pages. \$2 postpaid. Polk's Hobby Department Store, 314-5th Ave., New York, NY 10001.

New 1/48 scale Ryan Navion \$9, Douglas Skynight \$16.95, postpaid. These kits are for the experienced modeler. Catalog sheets available for SSAE. White Eagle Vacu-form Co., P.O. Box 1834, Dearborn, MI 48121.

Complete line of historical miniature figures. All your special needs. Plastic, metal, and wood; sheets, strips, and shapes. Fiber op-

tics, electronics, and all types of lighting. Complete diorama supplies — all scales. Catalog sheets, \$1.50. Train Exchange, 71 Hilliard St., Manchester, CT 06040.

ALL COPY: is set in standard 6-point type. First several words only set in bold face. If possible ads should be sent typewritten to insure accuracy.

Send your ads to FineScale Modeler, 1027 N. 7th St., Milwaukee, WI 53233.

tics, electronics, and all types of lighting. Complete diorama supplies — all scales. Catalog sheets, \$1.50. Train Exchange, 71 Hilliard St., Manchester, CT 06040.

Unusual kits: I deal in science fiction, television, movies, comics, figures, etc. Send SSAE for my newest list. John Green, 1872 W. Carol Dr., Fullerton, CA 92633.

Airliner model kits, decals, related items. Large selection, low prices. Compare and see! Mail order worldwide. \$1 for latest catalog. Starline Discount Hobbies, Box 38, Stanton, CA 90680.

Gate 66, the airline modeler's newsletter, published bi-monthly, covers all aspects of airliner modeling. Well-illustrated. \$9.50 per year in North America; \$18 per year worldwide. Checks payable to Starline, Gate 66, Box 660, Stanton, CA 90680.

Kit Collectors International, the club for model kit collectors, with our bi-monthly journal **Vintage Plastic** featuring articles and news for kit collectors and loads of ads. Over 500 members worldwide. Many benefits for members. SSAE gets full information. Mem-

bership, \$12 per year in U.S. and Canada; \$18 per year worldwide. Kit Collectors International, Box 38, Stanton, CA 90680.

Free copy of TrashNews, a humorous modeling publication. Send SSAE to Jack Gurner, 4202 Vann Ave., Memphis, TN 38111.

Imported books from Germany: Aviation and military subjects. From Motorbuch, Podzun, Alba, Mittler, Pawlak publishers. **Seite Waffen Arsenal**, Bildreport World War Two, Foto Archives. 50¢ in stamps for list. Dealer inquiries invited. Periodical Exchange Germania, P. O. Box 121, Hopkins, MN 55343.

Discount Hobby Center, 405 James St., Utica NY 13501. Phone (315) 733-3741. Imported and domestic models. Hasegawa direct from Japan. 1/72 A-10 \$10.95, 1/72 F-15C \$7.95, 1/72 T-2 Blue Impulse \$7.95, 1/32 F-8 Blue Impulse \$29.95. Monogram 1/48 F-105G \$4.89, Airfix 1/48 Stuka \$7.50, Fujimi 1/48 T-2 Blue Impulse \$16.95. Testors 1/48 SR-71 \$11.50, MPC 1/24 FW-190 (Focke-Wulf) \$9.97, 1/24 P-51D \$9.97 and much more. Send for our latest price list.

APC Hobbies: Discount mail order catalog. \$1. Box 122, Earlyville, VA 22936.

Old kits for sale: 2000 kits in collection now for sale. Send large SSAE to Charlie Pace, 11A Fence Rd., Earlyville, VA 22936.

Model Point 1/24 scale decals and conversion kits from West Germany now available in the U.S. Decals: Warsteiner for BMW M-1 and 320 (two cars) \$8, Sachs Sporting for BMW 320 \$7, Snitzer-Kraus Hi-Fi Team for BMW 320 \$8, Zakspeed-Kraus and Kraus-Wurth Turbo Capris (two cars) \$12. Vacuum form conversion for Entex, Bandi, and Tamaya BMW 320's. Harold Ertel's 320 \$4, Hans Stuck's Group 5 BMW \$5, Group 5 Zakspeed-Kraus Capri (Tamiya) \$5. Personal checks must clear before orders will be processed; postal money orders processed same day. Please add \$2 for postage and handling. Model Point-America, P.O. Box 27435, Denver, CO 80227-0435.

APC Hobbies: Discount mail order catalog. \$1. Box 122, Earlyville, VA 22936.

Old kits for sale: 2000 kits in collection now for sale. Send large SSAE to Charlie Pace, 11A Fence Rd., Earlyville, VA 22936.

Model Point 1/24 scale decals and conversion kits from West Germany now available in the U.S. Decals: Warsteiner for BMW M-1 and 320 (two cars) \$8, Sachs Sporting for BMW 320 \$7, Snitzer-Kraus Hi-Fi Team for BMW 320 \$8, Zakspeed-Kraus and Kraus-Wurth Turbo Capris (two cars) \$12. Vacuum form conversion for Entex, Bandi, and Tamaya BMW 320's. Harold Ertel's 320 \$4, Hans Stuck's Group 5 BMW \$5, Group 5 Zakspeed-Kraus Capri (Tamiya) \$5. Personal checks must clear before orders will be processed; postal money orders processed same day. Please add \$2 for postage and handling. Model Point-America, P.O. Box 27435, Denver, CO 80227-0435.

CONNECTICUT — Manchester

Complete plastics, cars, planes, trucks, ships, Military, diorama supplies, decals.

THE TRAIN EXCHANGE

71 Hilliard St. 646-0610

CONNECTICUT — Milford

#1 in specializing in hard to find models domestic and foreign.

HOBBY HAVEN

395 Boston Post Rd. 874-4434

DELAWARE — Wilmington

Open 9:30 to 5:30 Mon thru Fri; Sat 10:00 to 5:00. Complete assortment of hobby tools and large inventory of different models. If you can't find it, ask us!

VANEVER'S HOBBY CENTER

905 Orange St. 658-3896

FLORIDA — West Palm Beach

Fine tools. Supplies. Special orders. Mon-Fri 9:30-6. Sat 9:30-3. Closed Sunday.

CRAFT HOUSE HOBBY SHOP

1075 N. Military Trail 683-0764

ILLINOIS — Chicago

Complete stock domestic/imported N, HO, O kits and ready-to-run trains and supplies. Lionel, LGB, Unimat; crafts, boats, airplanes, live steam, collector's items.

TROST HOBBY SHOP

3111 W. 63rd St. 927-1400

ILLINOIS — East Moline

Domestic and imported kits, paints, and scratchbuilding supplies; IPMS display models.

LEISURE TIME HOBBY SHOP

655 17th Avenue 755-5333

ILLINOIS — South Holland

One of Chicago area's largest selections of plastic kits, 200 military, 500 cars, 400 planes, 100 ships, 50 trucks.

SCALE MODELS

1048 E. 162nd 339-3922

INDIANA — Indianapolis

Catering to all hobby needs. We stock all major brands. Z, N, HO, O trains. Planes, games, rockets, boats, cars, road race, art supplies, tools, balsa wood. Daily 10-8. Sat 10-5. Sun Nov-Mar.

TOM METZLER HOBBY CENTER

6838 Madison Ave. 784-3580

IOWA — Des Moines

One of the midwest's best selections of plastic models (injected & vacuformed), paints, decals, books, tools & supplies.

IOWA SERVICE HOBBY

2706 Beaver Ave. 279-1173

More Revell 1/48 scale trucks and cars:

Kenworth and White, \$15 each. Chevy \$12.50, 1925 Ford T, 1929 Ford A, 1932 Ford B (coupe), 1916 Stutz, 1914 Mercer, 1957 Bird, 1961 XKE, 1965 Corvette \$7 each. Less 10 per cent for orders over 10 kits. New 1/32 scale white metal tractor kits; Farmall B and BN, \$24.95 each. Bomford-Brigand 7205 long-reach mower \$27.50. \$1 for list, refundable with order. Shipping: \$1.50 first kit, 50¢ each additional kit, \$3 maximum. Replicas & Minatures, Inc., of Maryland, 7479-D Furnace Branch Rd., Glen Burnie, MD 21061. (301) 768-3648.

Books, booklets, all types of military vehicles (AFVs, trucks, jets, etc.). Wide selection. Free 12-page catalog. Portrayal Press, P.O. Box 1913, Bloomfield, NJ 07003. (201) 743-1851 evenings.

Collecting, buying, selling militaria? Use MX! Monthly paper features countless ads, articles, show calendar, mystery photograph. \$7.50 per year; \$14 for two years (until December 31, 1982). MX, P. O. Box 3F, Torrington, CT 06790. Sample: \$1.

Airliner model kits (various scales; domestic, imported, hard-to-find), decals, photographs, publications, lithographs — large selection! Many exclusive items available. Mail orders are our specialty, quick delivery everywhere in the U.S. and around the world. Send \$1 for latest catalog. Jet Set Systems USA, 549-G Rambler, Ponce, PR 00731.

Plan enlarging service: Color photo packs, three-view drawings for 500 aircraft. Plans for giant, standoff, and fun fly. Catalog, \$2; \$4 overseas. Scale Plans and Photo Service, 3209 Madison Ave., Greensboro, NC 27403. Phone (919) 292-5239.

WANTED

Want to buy any books, magazines, photographs, articles, or anything about the German night fighter Me 262B-11A/u1. Contact: Mike Nelson, 6918 Stella Place, Anchorage, AK 99507.

KANSAS — Overland Park

One of the midwest's finest selections of military models, miniatures, books, modeling supplies, war and fantasy games.

THE KING'S CROWN

6860 W. 105th St. 341-6619

KENTUCKY — Hopkinsville

A full line model shop with an extensive selection of plastic kits & diorama, miniature and gaming supplies. We cater to the serious hobbyist.

THE HOBBY SHOP

Pennyville Mall 886-5749

MASSACHUSETTS — Lawrence

Radio control & model railroads our specialty. We carry a complete line of plastic kits, accessories and supplies for the serious modeler. Mon-Fri 12 noon-9pm. Sat 9:30-5pm.

VIC'S HOBBY SHOP

390 Haverhill St. (Rt. 10) 683-3581

MASSACHUSETTS — Worcester

"The Home of Hobbies since 1946" Plastic airplanes, ships, autos, paints, tools, & supplies. Complete line armor, MC & VISA. Daily 9:30-5:30. Wed 'til 8 pm.

HENRY'S HOBBY HOUSE, Inc.

34 Franklin St. 754-5604

FILL ALL YOUR NEEDS

ALL THE TIME

AT YOUR HOBBY DEALER

MICHIGAN — Ann Arbor

Kits Galore-Airbrushes & Accessories. Special orders for those hard-to-find items. Mon-Fri 11 to 9, Sat 9:30 to 5:30.

RIDER'S HOBBY

115 W. Liberty St. 668-8950

MICHIGAN — Dearborn

Open Monday thru Saturday 10am-9pm. Open Sunday 12-4pm. 1/2 mile west of Hyatt Regency.

WALT'S HOBBY

22001 Michigan 277-2513

MISSOURI — Kansas City

1000's of military & fantasy miniatures. 100's of fantasy & military games. Models, MicroScale, books, accessories.

YANKEE DOODLE GAME & HOBBY

6831 Longview Rd. 761-1113

NEBRASKA — Bellevue

Just outside the Strategic Air Command Museum means plastic models are our specialty. Worth a visit.

AIR-CRAFT HOBBIES

706 W. Mission 291-6630

LOCAL HOBBY SHOP DIRECTORY

TELL YOUR HOBBY RETAILER YOU SAW HIS AD IN FSM

Local Hobby Shop Directory: listings are available for the next eight issues for \$110 (payable in advance) or for the next four issues for \$60 (payable in advance), or at \$15 per issue (minimum of four insertions). Ads will be set in standard listing typography. All insertions must be consecutive and may be charged if you have credit established with us. No mention of mail order business or area code permitted.

CLOSING DATE: Fall issue closes July 15, Winter issue closes October 15. Spring issue closes January 15, and Summer issue closes April 15.

ALABAMA — Montgomery

Tools, paints, brushes, air brushes, styrene, detail parts, diorama supplies. Located in LeRoy Shopping Center. Tue-Fri 1:30-6, Sat 9:30-6. Closed Mon.

TRAINMASTER OF MONTGOMERY

3623 Debby Drive 288-5545

ARIZONA — Glendale

Specialized for the detail modeler. Complete reference library. Headquarters for ship models & parts.

VAL'S HOBBY HANGAR

5858 W. Camelback Rd. 934-6174

CALIFORNIA — Anaheim

Everything for the model ship builder; RC boats, cars, planes, military science, tools, books & rocketry. AT HOBBY CITY. Open Mon-Fri 10-8, Sat & Sun 10-6.

CENTURY HOBBIES

1238 Beach Blvd. 821-8300

CALIFORNIA — El Cajon

Plastic aircraft & armor kits, wargames, wargame figures, books, decals and militaria. Open Mon-Fri 11-6. Sat 10:30-5. Sun 12-4.

MILITARY EMPORIUM

700 N. Johnson #N 447-6662

CALIFORNIA — Garden Grove

Military kits, aircraft from around the world. Plastic armor, aircraft, wargames, books, paints, tools. Open Mon-Thur 12-8pm. Fri 2-8:30, Sat 10:30-7, Sun 12-5.

BROOKHURST HOBBIES

12741 Brookhurst Way 636-3580

CALIFORNIA — Lakewood

Importers of scale models, accessories, supplies, books & magazines from around the world plus all domestic lines.

THE MILITARY SHOP

Lakewood Center Mall No.128 630-5556

CALIFORNIA — Los Angeles

We stock Revell, Monogram, AMT, Tamiya, Testors, Hasegawa & more. Tools & supplies. Also R/C planes, cars, boats, HO & N trains. Open Monday-Saturday 10:15-7pm.

NATICK STORE

209 Wythe St. 626-3339

CALIFORNIA — Orange

Complete stock of styrene, paints, supplies & kits for modelers. One of Southern California's most complete stocks of model railroad supplies from #1 ga. to Z ga. Open 7 days

FRANK'S HOBBY SHOP

6667-668 N. Tustin Ave. 639-9901

CALIFORNIA — Ontario

We carry the tools, wood, plastic, and kits to complement any hobby field. Mon-Fri 10am-7pm, Sat 10am-6pm.

JACK'S HOBBYCRAFTS

2250 Suite B, So. Euclid 984-8700

CALIFORNIA — Pismo Beach

Military models and books our specialty. Also HO & N trains and books. Collectors kits and out-of-print books.

PAT HOLDEN'S BIG FOOT HOBBIES

1020 Price St. 489-7215 eve's only

1020 Price St. 489-7215 eve's only

CALIFORNIA — Upland

One of the largest selections of kits, reference material, and accessories in the southwest.

CALIFORNIA — —

1655 N. Mountain 985-9212

COLORADO — Grand Junction

Western Colorado's complete hobby center. Mon-Fri 10am-6pm, Sat 9:30-5:30.

The HOBBY HUT

1125-27 North Ave. 242-8761

COLORADO — Loveland

HO & N gauge trains, plastic models. Wooden ships, wood supplies, paint supplies. X-acto and Dremel tools, model rockets. Open Mon-Fri 10-5:30. Sat 10-5. Sun 1-4:30.

THOMPSON'S HOBBIES

1730 W. Eisenhower Blvd. 669-2326

CONNECTICUT — Cos Cob

Trains, planes, armor, doll houses and miniatures. All hobby accessories.

HOBBY HOUSE

405 E. Putnam Ave. 869-0969

INDIANA — Indianapolis

Catering to all hobby needs. We stock all major brands. Z, N, HO, O trains. Planes, games, rockets, boats, cars, road race, art supplies, tools, balsa wood. Daily 10-8. Sat 10-5. Sun Nov-Mar.

TOM METZLER HOBBY CENTER

6838 Madison Ave. 784-3580

IOWA — Des Moines

One of the midwest's best selections of plastic models (injected & vacuformed), paints, decals, books, tools & supplies.

IOWA SERVICE HOBBY

6838 Madison Ave. 784-3580

MISSOURI — Kansas City

1000's of military & fantasy miniatures. 100's of fantasy & military games. Models, MicroScale, books, accessories.

YANKEE DOODLE GAME & HOBBY

6831 Longview Rd. 761-1113

NEBRASKA — Bellevue

Just outside the Strategic Air Command Museum means plastic models are our specialty. Worth a visit.

AIR-CRAFT HOBBIES

706 W. Mission 291-6630

Winter 1982

73

NEW JERSEY — Cranford

One of the best little hobby shops in Jersey. Plastic kits, wooden ships, HO & N trains. Paints, books, fabulous displays.

DICK'S HOBBYLAND
16 North Union Ave. 272-7660

NEW JERSEY — East Brunswick

Role playing games, books, magazines, hobby kits from around the world. Military and fantasy miniatures. HO trains and paints.

ADVENTURE HOBBIES
290 Route 18, Int'l Mkt. 583-2088

NEW JERSEY — Pennsauken

The latest in plastic military kits, books, magazines, paints and decals. We have automobile and ship kits.

TED'S ENGINE HOUSE
6307 Westfield 662-0222

NEW JERSEY — Red Bank

One of New Jersey's most complete hobby centers. Open Mon-Wed 10-6. Thur & Fri 10-8. Sat 10-5. Sun 12-4.

HOBBYMASTERS
62 White Street 842-6020

NEW YORK — Brooklyn

Complete line of military kits, both domestic and imported. Paint and accessories. Mon, Thur, Fri 10:30-8:00pm, Tue, Wed, Sat 10:30-6:00pm.

WALT'S HOBBY SHOP, Inc.
7909 5th Ave. 745-4991

NEW YORK — Floral Park

Complete selection of models; military, airplanes, cars. Building supplies, paints and tools

MALVERNE HOBBY SHOP
270 Jericho Turnpike. 328-3496

NEW YORK — Flushing/Queens

Large selection of plastic and wood kits, diorama and scratchbuilding supplies, trains: HO & N, R/C supplies, metal figures and gaming, arts and crafts.

HARMONY HOBBIES
196-30 Northern Blvd. 224-6666

NEW YORK — New York City

Kits and modelling supplies. Open Mon-Fri 10-5:45. Sat 10-5.

GATEWAY HOBBIES, INC.
.62 West 38th St. 221-0855

NEW YORK — New York City

5 floors of Hobbies. Our wide selection includes Heller, Iron Curtain kits, and domestic lines.

POLK'S HOBBY
314 5th Ave. 279-9036

NEW YORK — Utica

Imported & domestic plastic models. HO & N scale trains. Rockets, air brushes, books, scratchbuilding supplies.

DISCOUNT HOBBY CENTER
405 James St. 733-3741

OHIO — Cleveland

Airplanes, boats, RC, rockets, plastic kits, trains, books, tools, wargames.

Mon-Fri 10-8:30. Tue-Wed-Thur-Sat 10-5.

NATIONAL HOBBY, INC.
5238 Ridge Road 749-2450

OHIO — Columbus

All scales of imported and domestic aircraft, armor and miniatures. Decals, books, paints.

12-9 daily, 12-5 Sunday

STRETE HOBBIES
3655 Sullivant Ave. 279-6959

OHIO — Mansfield

Plastic military model kits, military medals, books, coins, military miniatures, D & D wargames and hobby supplies.

Mon-Fri 3pm-6pm. Sat 12-6pm

THE PANZER HUT
993-B Ashland Rd

OHIO — North Canton

Plastic model kits, how-to books & magazines, airbrushes & hobby tools, paint, wood & glue. HO trains, rockets, games. R/C specialists.

Knowledgeable personnel. Special orders.

MODELER'S HAVEN
4255 Portage N.W. 499-6000

OHIO — Oak Harbor

Plastic & wood kits, scratchbuilding and diorama supplies. Tools and accessories. Personalized and friendly service. Located in the Mini-Mall.

OAK HARBOR HOBBIES
142 W. Water St. 898-1300

OREGON — Astoria

Plastic model kits, complete line of miniatures and boardgames, HO & N scale supplies. Orders on request. Open 10 to 6 Mon-Sat.

LEN'S HOBBY CENTER
1150 Duane St. 325-1394

OREGON — Corvallis

Complete stock — R/C, plastics, trains, tools, paints, scenery, books, structural materials, airbrushes, woods, catalogs, trains Z, N, HO, O.

AJ'S HOBBIES
2025 NW Circle 753-7540

PENNSYLVANIA — Erie

Plastic kits, books, games, railroads. Metal figures, historical & fantasy. Open Monday-Friday 11-8. Saturday 9-5.

PENN STATION MODEL SHOP
3435 West Lake Rd. 833-5423

RHODE ISLAND — Pawtucket

All types of model kits, domestic & imported, old & new, for all interests; plus books, paints, magazines, tools and supplies.

Open Mon-Fri 4pm-8pm. Sat 10am-6pm.

PARENT HOBBIES
270 West Ave. 722-2398

RHODE ISLAND — Westerly

One stop hobby center. Large selection of plastic & wood model kits. Many tools and accessories for easier modeling.

Open Monday thru Saturday

IRON HORSE HOBBIES
62 High Street 596-7228

FILL ALL YOUR NEEDS**ALL THE TIME****AT YOUR HOBBY DEALER****TEXAS — Abilene**

Quality models for creative modelers. Full line hobby shop featuring plastic models, trains, RC, fantasy figures and games.

Stop and say 'hi' to Margaret and Otto!

THE HOBBY CENTER
3421 S. 1st 672-7388

TEXAS — Abeline

For just about the best scale modeling and models. Monthly meetings.

Open 9-5:30 Monday through Saturday.

MAKER'S HOBBIES
715 Grape Street 673-3291

TEXAS — Arlington-D/FW Metroplex

Kits-tools-details-wood-plastic Books-scenes-paints-R/C-D/D HO, N, railroad layouts

Mon-Fri 10-8, Sat 10-6. We are modelers

THE HOBBY HUB
903A Pioneer Pkwy W. 265-8101

TEXAS — Austin

Our specialty is scale modeling. Wide selection of domestic and foreign kits, paints, tools, books and supplies.

KING'S HOBBY SHOP
8810 Lamar 836-7388

TEXAS — Irving (Dallas Area)

Air aviation books, profiles, magazines, imported plastic kits. HO, N scale trains, FAOW, R/C, U/C planes and cars. Mon 1-7. Tue-Sat 9:30-7.

M-A-L HOBBY SHOP
108 S. Lee St. 438-9233

UTAH — Roy

Complete lines of plastics, books, wargames and figures, accessories and paints with expert advice to aid you.

Special ordering is our business.

MATT'S MODELS
5649 S. 1900 W. 825-1400

EVERGREEN SCALE MODELS**F**

1st Armored Model Supply Company 7

FineScale Modeler 17, 21

Floquil-Polly S Corp. 44

G

G H Q Models 44

Gateway Hobbies 72

Grandt Line Products 62

R. M. Groene & Co. 13

H

Harold's Place 37

R. H. Hebner Distributing Co. 62

Hugh's Aviation Prints 19

I

IPMS/USA 71

J

JMC/Con-Cor 9

K

Kalmbach Publishing Co. 10, 67, 75

A. Kempees 7

Kit Collector's Clearinghouse 62

L

LST Products 12

Lencraft 5

M

Microscale Decals 60

Minicraft Models 61

Meta Models 37

Mitchell Products 4

Model Car Masterpieces 2

Model Rectifier Corp. 76

Modeler's Discount Hobby Shop 63

N

The Model Works 4

Monogram Aviation Publications 51

P

New England Custom Hobbies 20

New Jersey Hobbies 65

Northwest Short Line 65

R

R. V. F. Hobby Imports 20

Repla-Tech International 5

S

Scale Aircraft Modelling 68

Scale Model Research 64

Scientific Models 43

The Spare Time Hobby Shop 71

Squadron Mail Order 15, 51

Strete Hobbies 20

T

299 Models 5

Tenax 7R 62

V

Vintage Castings 65

W

W.R.W. Imports 8

Waldron Model Products 63

Walther's 16

War Eagle, Inc. 72

Weapons & Warriors 64

Williams Brothers 12

Wings 48 & Wings 72 66

Woodland Scenics 7

VIRGINIA — Richmond

Quality selection of model aircraft, armor, ships, figures and reference material. Exit 14 of I-95 and I-64. Open Monday-Saturday 10-6. Friday 10-8.

HIGH COMMAND HOBBIES
3108 N. Boulevard 355-1941

WASHINGTON — Bellevue

One of Seattle's finest shops for the fine scale modeler. Open Mon-Tue 10-8. Fri & Sat 10-midnight. Sun noon-5.

THE TRIPLE ALLIANCE

10328 Main Street 453-8939

WASHINGTON — Oak Harbor

Plastic models. MicroScale decals — Humbrol paint. Complete model railroading department.

TED'S HOBBY & TOY

1090 W. Pioneer 675-4392

WASHINGTON — Seattle

Scale model ships, trains, planes, tanks, military & wargaming miniatures, books, tools, decals, etc. Mon, Wed, Fri 12:30-6:00; Tue, Thur 12:30-8:00; Sat 10:00-6:00.

American Eagles Inc. Military Hobbies

8556-58 Greenwood N. 782-8448

WISCONSIN — Madison

One of the midwest's most complete hobby shops. Tools, plastic kits, wargames, model railroading, miniatures. Hours: 9-9 Mon & Fri, 9-6 Tue, Wed, Thur, 9-5:30 Sat, 12-5 Sun.

MIDVALE HOBBY SHOP

505 S. Midvale Blvd. 238-2233

CANADA — Alberta, Edmonton

Fine scaler's supplies, literature hobby tools, special orders

ROUNDHOUSE SALES

7931 104th St. 433-0917

CANADA — Fredericton, N.B.

The modelers store. Specializing in trains, armor, planes, war & fantasy games. Only quality lines stocked.

Open Tue-Wed 9-5. Thur-Fri 9-9. Sat 9-5.

THE RAILHEAD

384 Queen Street 455-9274

CANADA — Ottawa, Ontario

One of Canada's leading model shops. Complete line of military & aircraft kits, decals, paints and accessories.

HOBBY HOUSE, LTD.

478 Rideau St. 232-2778

CANADA — Montreal, Quebec

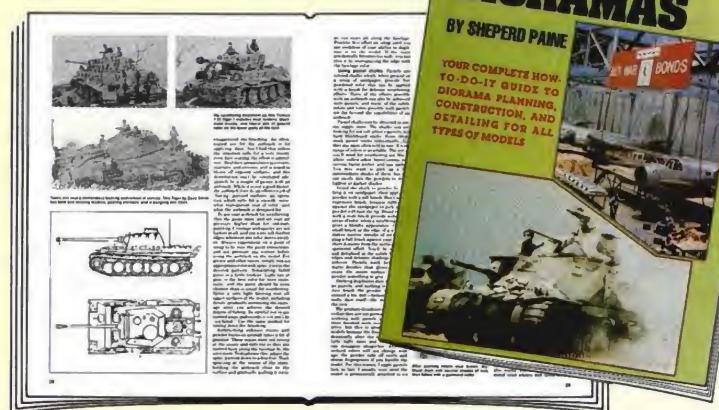
Model kits, painting supplies, air brushes, free advice and expert help. Regular store hours 6 days a week.

CARL'S HOBBY SHOPS Ltd.

6056 St. Hubert St. 273-6008

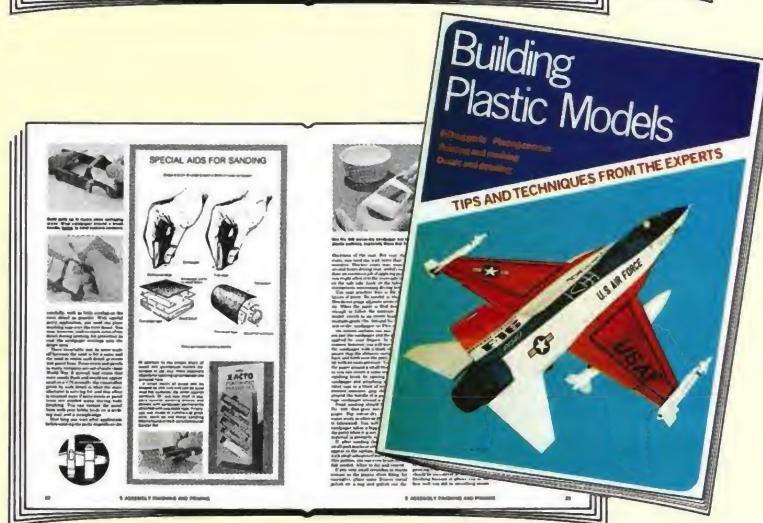
HOW TO BUILD DIORAMAS

This book is for you—whether you model aircraft or armor, ships or figures! In 104 pages, Sheperd Paine shows you how to design, plan, and build dioramas from the ground up! With the aid of photos and drawings, Paine offers you tips on weathering, reveals his expert techniques for converting and painting figures, and explains methods of shadow box construction and lighting! **\$8.95**



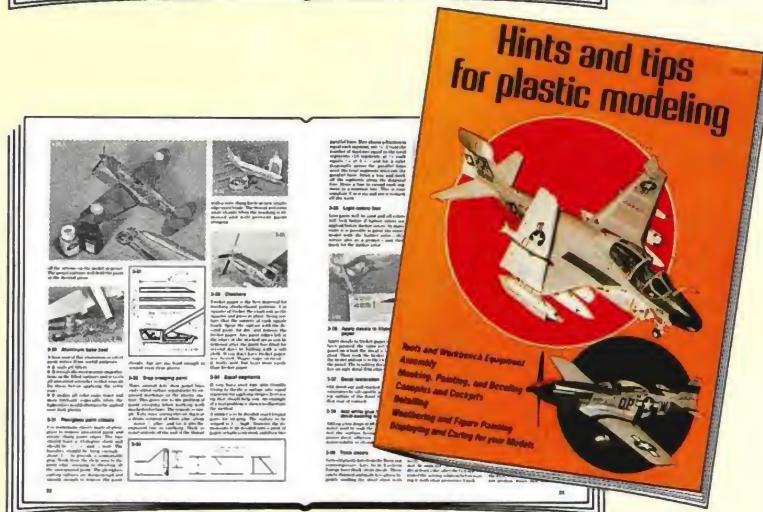
BUILDING PLASTIC MODELS

You'll enjoy a successful start in the hobby of plastic modeling with the help of this book. Guided by easy-to-understand, step-by-step instructions, you'll learn all the basics of plastic modeling—from tool selection and kit assembly to painting, decaling, and detailing. Read these 64 pages and you'll soon be building superb, prize-winning plastic models just like the experts! Written by Robert Schleicher. **\$4.75**



HINTS AND TIPS FOR PLASTIC MODELING

Here's one source that contains 255 plastic modeling hints and tips! The techniques in this book were compiled from the publications of the International Plastic Modelers Society/USA, and each one will aid you in becoming a better plastic modeler! In 48 well-illustrated pages, you'll discover tips on gluing, filling seams, masking, painting, decaling, weathering, superdetailing, and much more! **\$3.95**



DEPT. 4254
KALMBACH BOOKS
1027 N. SEVENTH ST.
MILWAUKEE, WI 53233

Please send me the books I've marked.

My check is enclosed
 This is a credit card purchase

If you don't wish to clip your magazine, copy the necessary information including department number on a separate sheet. Prices subject to change. © KALMBACH PUBLISHING CO.

NAME _____

STREET _____

CITY _____

STATE, ZIP _____

CHARGE TO: MASTERCARD
 VISA EXP. DATE _____

CARD NUMBER _____

SIGNATURE _____

QUANTITY TITLE PRICE

BUILDING PLASTIC MODELS	\$4.75
FAMOUS SPACESHIPS OF FACT AND FANTASY	\$8.50
HINTS AND TIPS FOR PLASTIC MODELING	\$3.95
HOW TO BUILD DIORAMAS	\$8.95
HOW TO BUILD PLASTIC SHIP MODELS	\$6.25
MODELING TANKS AND MILITARY VEHICLES	\$8.95
WORLD WAR TWO JET FIGHTERS	\$8.50

SUBTOTAL _____

Postage and handling: U. S., \$.75; foreign \$1.25 (per order); Wisconsin residents add 5 per cent sales tax _____

TOTAL _____

CHECK YOUR FIGURES WITH MRC-TAMIYA



NEW FAMOUS GENERALS IN 1/35 SCALE (MM218) A complete collection of WW II's most influential leaders in one, never before available kit. These are MRC-Tamiya jewels. Lifelike replicas of Rommel, Montgomery, Patton, Eisenhower and Mac Arthur. From minute facial expressions to the cut of their clothes and the crease in their trousers, the artisans at MRC-Tamiya have captured their essence in 1/35th scale.

In case you haven't noticed, MRC-Tamiya not only has the broadest, most realistic collection of WW II tanks and armor kits, but one of the widest and most faithfully detailed selections of military figures in the world. ■ Now take note, we've just added 11 more military figure kits. Five Famous Generals

(MM218) all in one 1/35th scale kit. And ten, individual military action figures, each a separate kit in "large as life" 1/25th scale. If you're searching for a perfect figure to add to your dioramas or collection, ask your hobby dealer to show you all the men from MRC-Tamiya.

WHEN IT COMES TO FIGURES IT ALL ADDS UP TO MRC-TAMIYA ... MAKE SURE YOU HAVE THEM ALL.

1/35 Scale Military Miniatures

- MM102 German Army Infantry (4 figures)
- MM104 U.S. Army Tank Crew (4 figures)
- MM107 British Army Infantry
- MM108 German Afrika Korps Infantry (4 figures)
- MM110 German Army Officer (4 figures)
- MM112 German Parachutists (4 figures)
- MM113 U.S. Army Infantry (4 figures)
- MM119 German Army Tank Crew (4 figures)
- MM122 Russian Infantry (4 figures)
- MM130 German Assault Troops (8 figures)
- MM131 German Artillery (8 figures)
- MM132 British Eighth Army Infantry (8 figures)
- MM137 D.A.K. German Afrika Korps (8 figures)

MM138 German Machine Gun Troops (8 figures)

- MM148 U.S. Infantry (West European Theater) (8 figures)
- MM153 Wermacht Mounted Infantry (2 figures plus mount)
- MM161 German Panzer Grenadiers (8 figures)
- MM173 German Observation Group (8 figures)
- MM179 U.S. Command Figure Set (4 figures)
- MM180 U.S. Combat Group (8 figures)
- MM184 U.S. Military Police Set (2 figures plus cycle)
- MM186 U.S. Gun and Mortar Team (8 figures)
- MM190 Japanese Army Infantry (4 figures)
- MM194 German Flak Crew (4 figures)
- MM206 British Stretcher Party (4 figures)

MM209 German Soldiers Seated (4 figures)

- MM217 U.S. Armored Troops (5 figures)
- MM218 Famous Generals (5 figures)
- MM219 U.S. Mortar Set (3 figures plus mortar)
- MM221 U.S. Infantry Weapons Set

1/25 Scale Military Series

- PF-0001 German MG34 Machine Gunner
- PF-0002 German Panzer Grenadier With Rifle
- PF-0003 German Wehrmacht Squad Leader
- PF-0004 German Artillery Officer
- PF-0005 Field Marshal Rommel
- PF-0006 General Patton
- PF-0007 U.S. Army Radio Operator
- PF-0008 U.S. Army Tank Commander
- PF-0009 U.S. Attacking Infantryman
- PF-0010 U.S. Marching Infantryman



THE LONG AND THE SHORT...

General Rommel (PF0005) and General Patton (PF0006) 1/25th scale, are shown next to their counterparts from the 1/35th Famous Generals kit (MM218). Note the masterful precision, the lifelike expressions, the three-dimensional accuracy...a hallmark of MRC-Tamiya craftsmanship. And remember, there are 10 kits in the new 1/25 scale PF series... all in a big bold size for expanded detail.

Send \$2.00 For New MRC-Tamiya Catalogue-Encyclopedia